

Amended Environmental Assessment Camp Grisdale Road Improvements Grays Harbor County, Washington

WA PFH 208-1(1)



**U.S. Department of Transportation
Federal Highway Administration
Western Federal Lands Highway Division**



**February 24, 2005
Amended June 22, 2007**

AMENDED ENVIRONMENTAL ASSESSMENT

Camp Grisdale Road Improvements Grays Harbor County, Washington

WA PFH 208-1(1)

U.S. Department of Transportation
Federal Highway Administration
Western Federal Lands Highway Division
610 East Fifth Street
Vancouver, Washington 98661-3801

February 24, 2005
Amended June 22, 2007

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Grays Harbor County, Washington
Amended Environmental Assessment**

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Submitted
Pursuant to Public Law 91-190
National Environmental Policy Act

U.S. Department of Transportation
Federal Highway Administration
Western Federal Lands Highway Division

Cooperating Agencies
U.S. Department of Agriculture, Forest Service
Grays Harbor County

8/22/07

Date Approved



Robert B. Lale, III
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February 24, 2005
Amended August 20, 2007



U.S. Department
of Transportation

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Administration**

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August 20, 2007

In Reply Refer To:

FINDING OF NO SIGNIFICANT IMPACT
For
Camp Grisdale Road
WA PFH 208-1(1)

Decision

The Western Federal Lands Highway Division (WFLHD) of the Federal Highway Administration (FHWA) has determined that the selected course of action for improving approximately 17.7 miles of the Camp Grisdale Road (Forest Road [FR] 22), and approximately 0.8 mile of Forest Development Road (FDR) 2294, will have no significant impact on the human environment.

The WFLHD has decided to implement the Action Alternative, evaluated in the *Environmental Assessment, Camp Grisdale Road* (EA), as amended August 20, 2007. The selected alternative, including mitigation measures, meets the stated purpose and need of the project while minimizing impacts to the human environment. Comments received through the public involvement process and review of the EA have been considered in this decision.

The selected alternative will improve the Camp Grisdale Road and FDR 2294 from approximately 1,000 feet south of the limit of the paved section of Wynoochee Valley Road (Grays Harbor County Road 51190) and terminates at the Wynoochee River Bridge on FDR 2294 immediately below the Wynoochee Lake dam. The selected alternative consists of the following actions:

- Camp Grisdale Road will be designed for a speed of 40 mph. FDR 2294 will retain its existing alignment but will be paved.
- The Camp Grisdale Road drainage system will be improved. Culverts will be repaired or replaced to accommodate stormwater flows and to prevent debris clogging and associated maintenance requirements.
- Eight large culverts would be replaced with fish-passable structures.
- The culvert at Schaffer Creek will be replaced with a bridge to restore streamflow, fish passage, and wetland areas.
- Hazardous curves will be realigned and widened, and shoulders will be added. The road will be realigned at Neil Creek to avoid impacts to wetlands.
- The road will be paved and striped to define travel lanes.
- Disturbed sites will be seeded or planted with native vegetation appropriate to the site.

**MOVING THE
AMERICAN
ECONOMY**

At this time, construction activities are expected to begin in the spring of 2008. The project will improve roadway structure and provide a durable surface for year-round access to the national forest and its multiple use opportunities as well as surrounding properties. The project will provide a roadway width and alignment that incorporates current standards for safety, and it will improve conditions that have led to maintenance problems throughout the route. The project will also substantially reduce airborne sediments that currently build up on corridor vegetation throughout the project route.

Public Involvement

The EA was released for public and agency review the first week of March, 2005. An open house was held after release of the EA on March 23, 2005, in the Montesano City Hall. The open house was advertised in the Montesano *Vidette* on March 2, 2005. Articles appeared in the Aberdeen *Daily World* on March 22, 2005 and in the *Vidette* after the open house. Public and agency comments received during the review period were incorporated into the amended EA. The amended EA was released for public review on June 28, 2007. The availability of the amended EA was published in the Montesano *Vidette* and the Aberdeen *Daily World* on June 28, 2007. One question was received during the review period, which terminated on July 28, 2007. This question was addressed in the amended EA.

Major Environmental Issues

Water Resources

The project corridor lies within the lower Chehalis River watershed. The largest of the drainages within the area include the Wynoochee River, Anderson Creek, Save Creek, Neil Creek, and Schafer Creek. The Camp Grisdale project corridor crosses 25 perennial streams and 21 intermittent drainage courses, including the drainages mentioned.

Gravel roads are considered impervious because of their compacted surfaces. Widening Camp Grisdale Road and paving would increase the existing impervious surface of the road; however, the improved roadway would decrease the sediment loading in adjacent streams by eliminating dust and substantially reducing surface erosion. The roadway has been designed in accordance with applicable runoff standards, and mitigations to minimize construction and impacts to water resources would be implemented during project work.

Ninety-four culverts cross the roadways in the project corridor. Some of these culverts have deficient conveyance capacities and poor fish passage characteristics, and also require extensive maintenance. The effect of these culvert installations has been restriction of flows and fish passage along some segments.

This project replaces deficient culverts with structures that create fish passage and increase available fish habitat. The project is expected to add 0.15 acres of fish habitat through restoration of riparian habitat, and open new access to approximately 6.75 miles of stream habitat by creating passage. Crossings have been designed for consistency with aquatic conservation strategy objectives as specified in the *Northwest Forest Plan* guidelines for natural resource protection. Mitigations to minimize construction impacts would be implemented throughout project activities.

Any increase in runoff pollutant load due to paving would be minor and would be offset by a reduction of airborne and waterborne sediment deposited in streams from the existing gravel road. Correcting deficiencies at crossings is expected to have a beneficial effect on the watershed by restoring more natural flows and connectivity, and restoring fish passage and habitat. As a result, the project will not significantly affect water resources.

Threatened and Endangered Species

In accordance with the Endangered Species Act of 1973 as amended (ESA), the WFLHD consulted with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NOAA Fisheries) regarding the potential effects of the project on federally listed threatened and endangered species that may occur in or near the project area. A Biological Assessment (BA) was prepared to evaluate these effects.

In the USFWS Biological Opinion (BO) of October 6, 2006 the agency concurred with the following determinations presented in BA that the project may affect, but is not likely to adversely affect, the following species: bull trout (*Salvelinus confluentus*) or bull trout critical habitat, northern spotted owl (*Strix occidentalis caurina*), or bald eagle (*Haliaeetus leucocephalus*). As a result, the proposed action will not significantly affect these species or critical habitat.

In addition, the USFWS concurred with the determination that the project would not likely jeopardize the continued existence of marbled murrelet (*Brachyramphus marmoratus*). The proposed action would impact only a narrow strip of habitat along the roadway in an area that has been and continues to be disturbed by other activities. As a result, the proposed action will not significantly impact the marbled murrelet.

The USFWS also concurred with the determination that the project would not likely alter the function of designated critical habitat to serve the intended conservation role for the marbled murrelet. As a result, the proposed action will not significantly impact marbled murrelet critical habitat.

The NOAA Fisheries determined on August 5, 2003, and confirmed on June 19, 2007, that no listed fish species are present in the project area, and that the project will therefore have no effect on any federally listed species under NOAA Fisheries jurisdiction. In addition, Essential Fish Habitat was evaluated as mandated by the Magnuson-Stevens Fishery Conservation and Management Act, resulting in a determination that the project would not adversely affect Essential Fish Habitat. As a result, the proposed action will not significantly affect NOAA Fisheries jurisdictional listed fish species or Essential Fish Habitat.

Wetlands

In accordance with Executive Order 11990, *Protection of Wetlands*, the WFLHD closely evaluated the proposed road improvements and the impacts to wetlands. Design refinements reduced the original estimate of wetland disturbance. The project will disturb less than 2.0 acres of wetlands through minor impacts to small wetlands adjacent to the road. Of this total, about 0.6 acre will be temporarily disturbed by excavation at culverts, and about 1.4 acres will be permanently disturbed. The original design proposed 3.7 acres of permanent wetland

disturbance. This proposed disturbance was reduced to 1.4 acres through deliberate avoidance, where possible, and minimization.

As mitigation for permanent impacts, a total of 8.2 acres of wetlands will be created, enhanced, or preserved as follows. Approximately 2.8 acres of wetlands will be created adjacent to Neil Creek in a recently cleared area south of the crossing, and in the abandoned roadway north of the crossing. The wetland areas on both sides of the existing road will be reconnected when the abandoned road has returned to wetland. Over 5 acres of existing wetland will be preserved adjacent to the creation site, and some portions may be enhanced with vegetation. The restoration at the Schaffer Creek crossing and the replacements of culverts at additional sites will result in removal of 0.3 acre of fill in riparian areas. These areas will be revegetated with locally native species to restore riparian function.

Impacts are minor and occur in isolated patches of wetlands that have been degraded by sedimentation from the road and which provide limited value. The mitigation creates a contiguous wetland area away from the road. Based on the level of impacts and the planned mitigation, the WFLHD has determined that there will be no significant impacts to wetlands, and that the proposed action includes all practicable measures to minimize harm to wetlands. As a result, the project will not significantly affect wetlands.

Cultural Resources

An inventory of cultural resources was conducted within the area of potential effect (APE). The results of the inventory were documented in the report *Cultural Resources Investigations for the Camp Grisdale Road Project, Grays Harbor County* (August 2004, revised July 2005) prepared by Archeological and Historical Services of Eastern Washington University. No resources eligible for listing in the National Register of Historic Places report were identified during the inventory. The report was submitted to the Washington State Historic Preservation Officer (SHPO) together with a request for concurrence with the finding of **no historic properties affected**. The SHPO concurred with this finding on February 16, 2005.

The WFLHD conducted an additional survey for a short realignment at the beginning of the project. Resources eligible for listing in the National Register of Historic Places report were identified during this supplemental survey. The results of the survey were submitted to the Washington State Historic Preservation Officer (SHPO) together with a request for concurrence with the finding of **no historic properties affected**. The SHPO concurred with this finding on August 22, 2005.

As a result, the proposed action will not significantly affect cultural resources.

Permits and Approvals


The following permits and approvals may be required prior to implementation of this project:

- Section 404 Permit: U.S. Army Corps of Engineers
- Section 401 Water Quality Certification: Washington Department of Ecology
- National Pollution Discharge Elimination System Permit (NPDES): U.S. Environmental Protection Agency
- Applicable U.S. Forest Service, county, state, and local permits and approvals

Finding of No Significant Impact

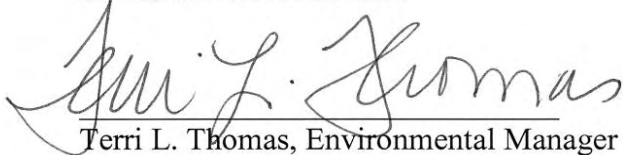
Pursuant to the National Environmental Policy Act of 1969, the WFLHD has assessed the environmental impacts of the proposed project. The EA was prepared in accordance with the Council on Environmental Quality (CEQ) NEPA Regulations set forth in 40 CFR parts 1500 to 1508 and the FHWA regulations contained in 23 CFR part 771. The proposal also conforms with all applicable federal statutes and executive orders. Based on the EA, and in accordance with guidelines for determining significance of proposed federal actions (40 CFR 1508.27), the WFLHD has concluded that the selected alternative will not result in a significant effect on the human environment. As a result of these findings, the WFLHD has determined that an environmental impact statement is not required by section 102(20) of NEPA or its implementing regulations. The WFLHD takes full responsibility for the accuracy, scope, and content of the amended EA.

PREPARED BY:


Cody Jones, Environmental Specialist
S. Books and Associates

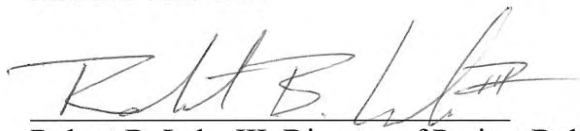
8/20/07
Date

RECOMMENDED BY:


Terri L. Thomas, Environmental Manager

8/20/07
Date

APPROVED BY:


Robert B. Lale, III, Director of Project Delivery
Western Federal Lands Highway Division

8/22/07
Date

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Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ACSO	aquatic conservation strategy objective
AMA	adaptive management area
AOP	aquatic organism passage
APE	area of potential effect
AR	aquatic resource
BMP	best management practice
CC	clear-cut
CE	categorical exclusion
CFR	Code of Federal Regulations
CHU	critical habitat unit
CR	county road
CSYU	cooperative sustained yield unit
dB	decibel
DPS	distinct population segment
EA	environmental assessment
Ecology	Washington Department of Ecology
EIS	environmental impact statement
ESA	federal Endangered Species Act
ESU	evolutionarily significant unit
FDR	forest development road
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
Forest Service	USDA Forest Service
FR	forest road
GIS	geographic information system
HCP	habitat conservation plan
HGM	hydrogeomorphic
HPA	hydraulic project approval
HUC	hydrologic unit code
LSR	late successional reserve
LUST	leaking underground storage tank
LWD	large woody debris
MOGC	mature old-growth conifer forest
MP	milepost
mph	miles per hour
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List (Superfund)
NRCS	Natural Resources Conservation Service

OAHP	Washington State Office of Archaeological and Historic Preservation
OF	open-field area
ORCAA	Olympic Region Clean Air Agency
PEM	palustrine emergent
PFMC	Pacific Fishery Management Council
PFO	palustrine forested
PM _{2.5}	inhalable particulate matter no larger than 2.5 microns
PM ₁₀	inhalable particulate matter no larger than 10 microns
POW	palustrine open water
PSS	palustrine scrub/shrub
RCW	Revised Code of Washington
RCRA	the federal Resource Conservation and Recovery Act
R3SB	riverine upper perennial streambed
R4SB	riverine intermittent streambed
SADT	seasonal average daily traffic
SASSI	Washington state salmon and steelhead stock inventory
SEA	special emphasis area
SEE	social, economic, and environmental (SEE Study Team)
SGCL	second-growth conifer forest
SGDL	second-growth deciduous forest
SHPO	State Historic Preservation Office
SOC	species of concern
SOSEA	spotted owl special emphasis area
SPCC	spill prevention, control, and countermeasures
SQG	small-quantity generator of hazardous waste
STGD	second/third-growth deciduous forest
STGM	second/third-growth mixed forest
STGMR	second/third-growth mixed forest, regeneration size
SWPPP	stormwater pollution prevention plan
SYU	sustained yield understanding
TGCR	third-growth conifer forest, regeneration size
TGCS	third-growth conifer forest, from regeneration size to small-diameter trees
TGDR	third-growth deciduous forest from regeneration size to small-diameter trees
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
U.S. EPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WFLHD	Western Federal Lands Highway Division of FHWA
WRIA	water resource inventory area (Washington state classification)
WSDOT	Washington State Department of Transportation

Executive Summary

The Western Federal Lands Highway Division (WFLHD) of the Federal Highway Administration (FHWA), in cooperation with the U.S. Department of Agriculture, Forest Service; Washington State Department of Transportation (WSDOT); and Grays Harbor County, is proposing to improve approximately 17.7 miles of Camp Grisdale Road (Forest Road [FR] 22), including approximately 0.8 miles of Forest Development Road (FDR) 2294. For the purposes of this report, the 17.7-mile segment of FR 22 and FDR 2294 proposed for improvement is called Camp Grisdale Road.

The proposed project is located in Grays Harbor County approximately 17 miles north of Montesano, Washington. The project corridor begins 1,000 feet south of the limit of the paved section of Wynoochee Valley Road (Grays Harbor County Road 51190), follows FR 22 and FDR 2294, and terminates at the Wynoochee River bridge on FDR 2294, immediately below the Wynoochee Lake dam. FDR 2294 connects to FR 22 in the northern portion of the project corridor and serves as the access road to the Wynoochee Lake dam and Coho Campground.

The purpose of this project is to provide a safer and more efficient transportation route for motorists traveling from the Montesano area to Wynoochee Lake and surrounding forest areas. The proposed project would improve the operational safety, efficiency, and drivability of Camp Grisdale Road.

The existing Camp Grisdale Road is extremely rough gravel, with numerous potholes, and requires continual maintenance. Emergency vehicles responding to calls in recreation areas served by Camp Grisdale Road currently must travel at reduced speeds to avoid potholes. Many of the culverts that cross underneath the road are damaged or plugged, and some are barriers to fish passage.

Wynoochee Lake has recreational facilities and an improved campground. The existing road is too narrow for the traffic conditions and the sizes of vehicles using it. Several of the curves along the roadway are sharp. Timber harvesting occurs in the area during the summer, when logging trucks share the road with recreational traffic, resulting in a mix of vehicle types. The narrow driving lanes, absence of a painted centerline, and lack of shoulders make it difficult for vehicles traveling in opposite directions to pass safely.

Two alternatives are analyzed in this document. The no-action alternative would maintain the road in its existing condition, continuing the current maintenance requirements for frequent grading and gravel placement. The action alternative (which is the preferred alternative) would reconstruct the road surface, widen the lanes, and realign some curves. The improved road would largely remain within its existing alignment but would have pavement, shoulders, and drainage, with new or repaired drainage crossings as appropriate.

The design speed would be 40 miles per hour for FR 22. FDR 2294 would retain its existing alignment, but would be paved. Realignment of substandard curves would occur in the following four areas of the existing alignment, but would be paved.

- At the southern terminus and at 0.2 miles from the southern terminus of the project corridor (two minor realignments)
- Near Cougar Smith Road
- Between 3.2 miles and 5.1 miles north of the beginning of the project (two minor realignments)
- Near Neil Creek.

The drainage system along Camp Grisdale Road would be improved. Culverts would be repaired or replaced to accommodate stormwater flows and to prevent debris clogging and associated maintenance requirements. Eight large culverts would be replaced with fish-passable structures: seven fish-passable culverts and one bridge. Fish-passable culverts would be constructed at aquatic resources (ARs) 9, 11, 19, 27 (Neil Creek), 30a, 30b, and 48 to comply with the Northwest Forest Plan. A bridge would replace the culvert at AR 25 (Schafer Creek). The designs of the replacement culverts and the bridge crossing would meet fish passage design standards of the Forest Service, the U.S. Fish and Wildlife Service (USFWS), and the Washington Department of Fish and Wildlife (WDFW).

The project corridor (100 feet on either side of the centerline of the proposed alignment) lies within the lower Chehalis River watershed in state water resource inventory area (WRIA) 22. The largest of the drainages within the area include the Wynoochee River, Anderson Creek, Save Creek, Neil Creek, and Schafer Creek. Including these drainages, the Camp Grisdale Road project corridor crosses 25 perennial streams, 21 intermittent drainage courses, and 45 wetland complexes.

The National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries) and the USFWS were consulted about federally protected fish species presence within the streams that cross the project corridor or its vicinity. At the first issue of the draft environmental assessment, the agencies identified federally listed threatened, endangered, or candidate fish species, including coho salmon (candidate), coastal cutthroat trout (proposed threatened), and bull trout (threatened) (managed by USFWS). However, since the issue of the amended environmental assessment, coho salmon and coastal cutthroat trout have been dropped from their federal status. Also identified were marbled murrelet (threatened), spotted owl (threatened), and bald eagle (threatened).

Wildlife is abundant in the Camp Grisdale Road study area, particularly on Forest Service lands, due to the highly diverse wetland, riparian, and forest wildlife habitats. The project vicinity contains many deciduous forest-dominated riparian and wetland corridors, increasing the diversity of habitat in the study area and vicinity. The riparian areas within the Forest Service lands are managed as riparian reserves under the Northwest Forest Plan, minimizing the timber cutting in these areas. Typical wildlife species that use the habitats in this area include mammals such as the Roosevelt elk, black-tailed deer, black bear, bobcat, cougar, coyote, raccoon, beaver, mountain beaver, skunk, porcupine, forest bat, Douglas squirrel, Townsend's chipmunk, and

numerous small rodents. These animals are less likely to use disturbed habitat adjacent to the Camp Grisdale Road than less-disturbed habitat. Cleared areas and dense brush provide resources for a variety of species, including foraging for deer and elk, nesting and foraging for some birds, and hunting areas for raptors.

Terrestrial habitat resources within and adjacent to the project corridor are dominated by second-growth conifer forest. Third-growth regenerating conifer stands are another important habitat type. Some mature forest habitat is located in the northern portion of the study area, and there are several clear-cuts adjacent to Camp Grisdale Road. Wetlands, riparian areas, and the surrounding forest support numerous amphibians (e.g., frogs and salamanders), reptiles (e.g., snakes), and invertebrates (e.g., slugs, snails, and insects).

Potential direct and indirect impacts of the proposed road improvements on the natural and cultural environments are discussed. Direct and indirect construction impacts and operational impacts are individually addressed for both the preferred alternative and the no-action alternative.

Beneficial long-term effects of the preferred alternative, compared to the no-action alternative, include a reduction in ongoing soil erosion; a reduction in airborne sediment deposited in adjacent areas; major reductions in the amount of sediment delivered to wetlands, streams, their buffers, upland areas, and vegetation; and improved hydraulic connectivity through the project corridor. The preferred alternative would be beneficial to fish because of the installation of fish passage culverts.

The preferred alternative would result in no substantial changes in land use or development patterns; it may have a positive effect on the local economy if recreational use of the area increases; there would be no disproportionate effect on racial or ethnic minorities or low-income people; there would be a decrease in road maintenance needs and costs and a reduction in travel time for emergency vehicles; there would be no effects on any known cultural resource; no substantial visual impact; and there would be improved access to Wynoochee Lake.

Air quality would be improved, and there would be minor changes in noise levels, no effects related to hazardous materials, and minimal effects on natural resources and energy.

Compared to the no-action alternative, the preferred alternative would result in some adverse effects, including wider fill-slope areas along the existing roadway that would affect some aquatic resources; a potential increase in volumes of surface runoff entering streams that cross the project corridor; the loss of a small area of disturbed forest edge habitat; and minor modification of disturbed marbled murrelet, spotted owl, and bald eagle habitat.

A cumulative effects analysis for this project indicates that some cumulative effects on natural resources likely would result from the Camp Grisdale Road improvement project. Past actions considered in the cumulative impact analysis that have contributed to the present environmental conditions in the project area include road development, timber harvesting, and timber production. Present actions considered in the cumulative impact analysis for the project include

logging operations. Reasonably foreseeable future actions considered in the cumulative impact analysis include continued logging and forestry-related activities and improved access to and use of recreation facilities.

Mitigation measures are identified that could minimize direct, indirect, construction, operational, and cumulative adverse effects of the proposed project.

1.0 Project Description

The Western Federal Lands Highway Division (WFLHD) of the Federal Highway Administration (FHWA), in cooperation with the U.S. Department of Agriculture, Forest Service; Washington State Department of Transportation (WSDOT); and Grays Harbor County, is proposing to improve approximately 17.7 miles of Camp Grisdale Road (Forest Road [FR] 22), including approximately 0.8 miles of Forest Development Road (FDR) 2294. For the purposes of this report, the 17.7-mile segment of FR 22 and FDR 2294 proposed for improvement is called Camp Grisdale Road.

Location of the Proposed Project

The proposed project is located in Grays Harbor County approximately 17 miles north of Montesano, Washington. The project corridor begins 1,000 feet south of the limit of the paved section of Wynoochee Valley Road (Grays Harbor County Road 51190), follows FR 22 (Camp Grisdale Road) and FDR 2294, and terminates at the Wynoochee River bridge on FDR 2294, immediately below the Wynoochee Lake dam (Figure 1-1). Camp Grisdale Road is oriented primarily north to south, with a few sections that run east and west (USGS 1995, 1990 provisional edition, 1990a, 1990b, 1990c, 1990d). The proposed project is located through private timber lands and through the Olympic National Forest.

Camp Grisdale Road serves as the primary southern access route to the Olympic National Forest and the Wynoochee Lake recreation area. At the north end of the project corridor, Camp Grisdale Road continues west as FR 22 and connects to United States (US) 101 near Humptulips to the west. Near the southern end of the project terminus, Cougar Smith Road provides a connection between Camp Grisdale Road and US 101 near Shelton to the east. The Camp Grisdale Road project route is classified as a rural minor collector, which accumulates traffic from local roads, brings developed areas within reasonable distances of collector roads, provides service to smaller communities, and links the locally important traffic generators with their rural hinterland (AASHTO 2003).

Scope and Nature of the Proposed Action

The existing Camp Grisdale Road (FR 22) is an unpaved two-lane road that varies between 16 to 28 feet wide. The proposed improvements to FR 22 are based on a 40-mile per hour (mph) design speed. (Design speed is a selected speed used to determine the various geometric design features of the roadway. It is the speed that most drivers would select for the given highway segment under favorable conditions. Pertinent geometric features, such as horizontal curves and grades, are based on design speed [AASHTO 2004].) The road design includes two 11-foot paved lanes and two 3-foot unpaved shoulders totaling a width of 28 feet (Figure 1-2). Minor improvements to horizontal and vertical curves are proposed to improve the alignment. Major

realignments are proposed near Cougar Smith Road and at the Neil Creek (AR 27) crossing (Figure 1-3).

The proposed action also includes paving the unpaved portion of FDR 2294. FDR 2294 connects to FR 22 in the northern portion of the project corridor and serves as the access road to the Wynoochee Lake dam and Coho Campground. Its existing width varies between 16 and 28 feet. Higher design speeds were considered but rejected for the FDR 2294 segment of the roadway, because would generate excessive cut and fill slopes and intrude into adjacent habitat and old growth forest areas. Elimination of the FDR 2294 construction also reduces cost.

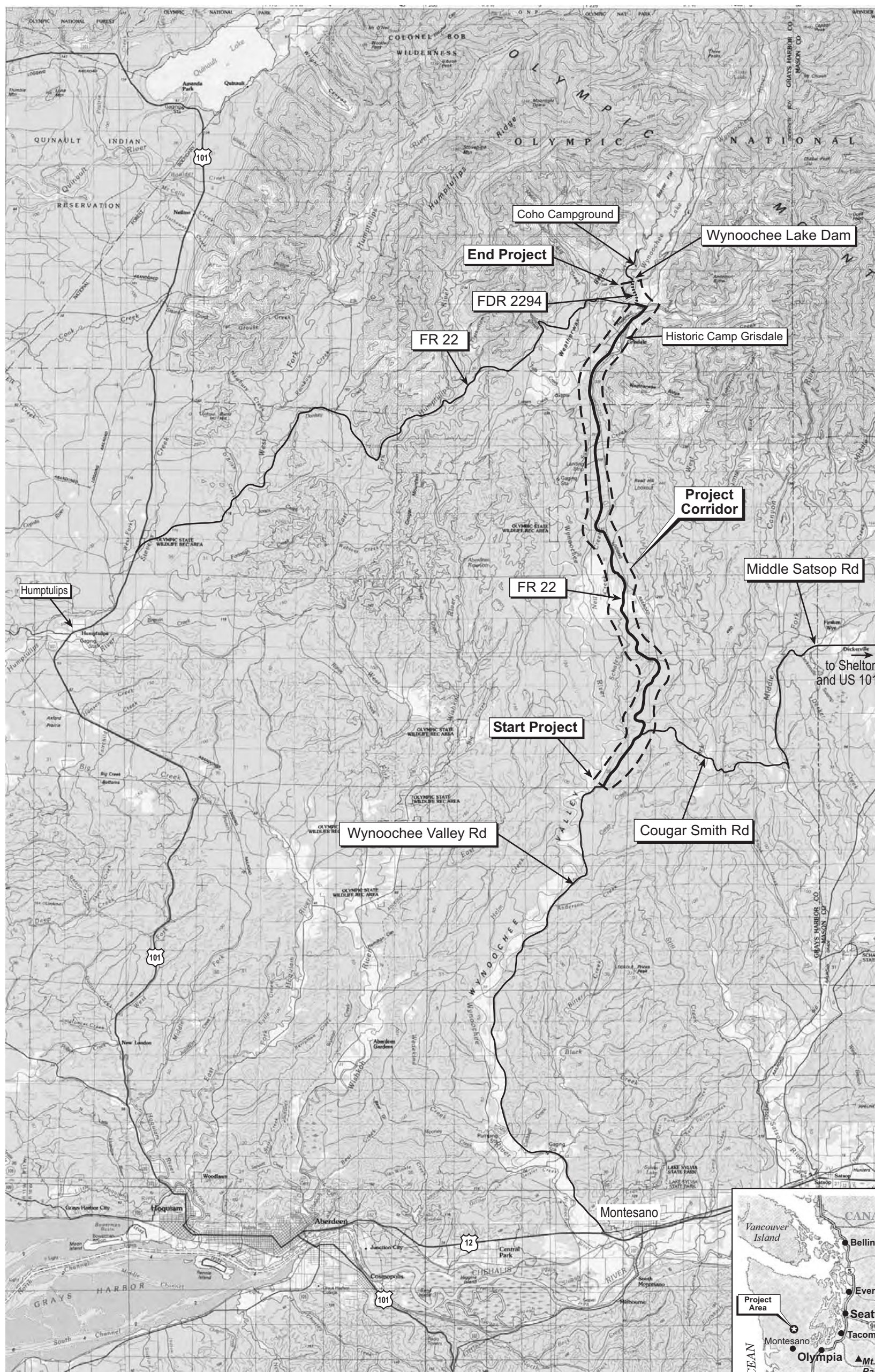
Culverts would be repaired or replaced to accommodate stormwater flows and to prevent debris clogging and avoid associated maintenance requirements. Eight large culverts would be replaced with fish-passable structures: seven fish-passable culverts and one bridge to comply with the Northwest Forest Plan. Fish-passable culverts would be constructed at aquatic resources (ARs) 9, 11, 19, 27 (Neil Creek), 30a, 30b, and 48. The aquatic resources are water features that include wetland complex, stream or both. A bridge would replace the culvert at AR 25 (Schafer Creek). The designs of the replacement culverts and the bridge crossing are provided in the biological assessment for this project (Herrera 2005c). The designs of the replacement culverts and the bridge crossing would meet fish-passage design standards of the Forest Service, the USFWS, and the Washington Department of Fish and Wildlife (WDFW).

Typically, the camp Grisdale road would be subject to road construction activities resulting in 30 minute delays from Thursday evening through Tuesday morning. The road would then be closed Tuesday morning and re-opened Thursday evening. Road construction activities additionally would be staged such that during Memorial Day weekends and Labor Day weekends (Friday, Saturday, Sunday, and Monday inclusive), and the week of the Fourth of July, the road would be open, subject to 30-minute delays. Closures would be coordinated with Green Diamond Resource Company, Tacoma Power, Satsop Center, and Coho Campground. Logging trucks would use the existing logging roads that are located on Green Diamond property. Other vehicles would find alternate routes.

During the first year of construction, a full closure of Camp Grisdale Road would be required beginning immediately after the week of the Fourth of July, and extending through August. During this time, traffic will be informed of the closure and instructed to find alternate routes. One available route is Donkey Creek Road, which is open to the public and used by the Forest Service for administrative access. This route is not recommended for oversize vehicles or trailers.

Proposed Construction Schedule

Phase 1 of the proposed project includes the road segment from the southern terminus of the project to and including Schafer Creek. Phase 1 is expected to start in summer 2008 depending on funding, and take two spring/summer construction seasons to complete. Culvert replacements in aquatic resources that are documented to contain priority fish species would be constructed within a work window specified by USFWS and WDFW (July 15 to October 15). Phase 2 would take two summer/spring construction seasons and begin upon completion of the first phase.



0 1 2 3 miles
Approximate scale



Figure 1-1. Vicinity map of the Camp Grisdale Road improvement project, Grays Harbor County, Washington.

CAMP GRIDDALE ROAD (WA PFH 208)
Typical Cross Sections

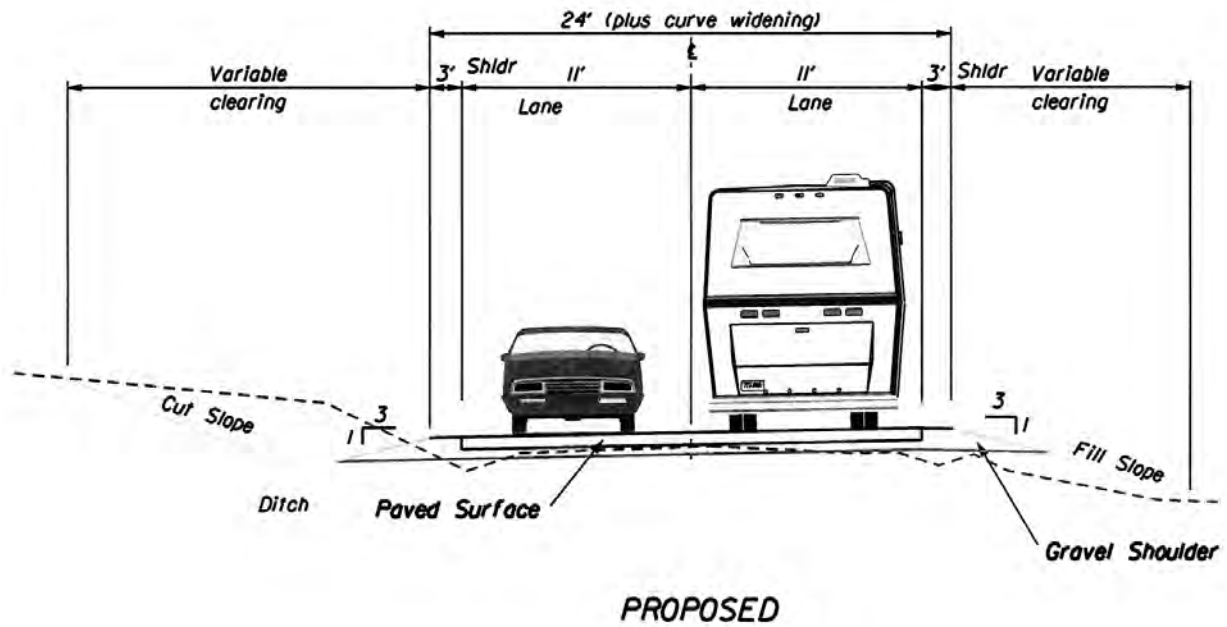


Figure 1-2. Camp Grisdale Road section for proposed conditions.

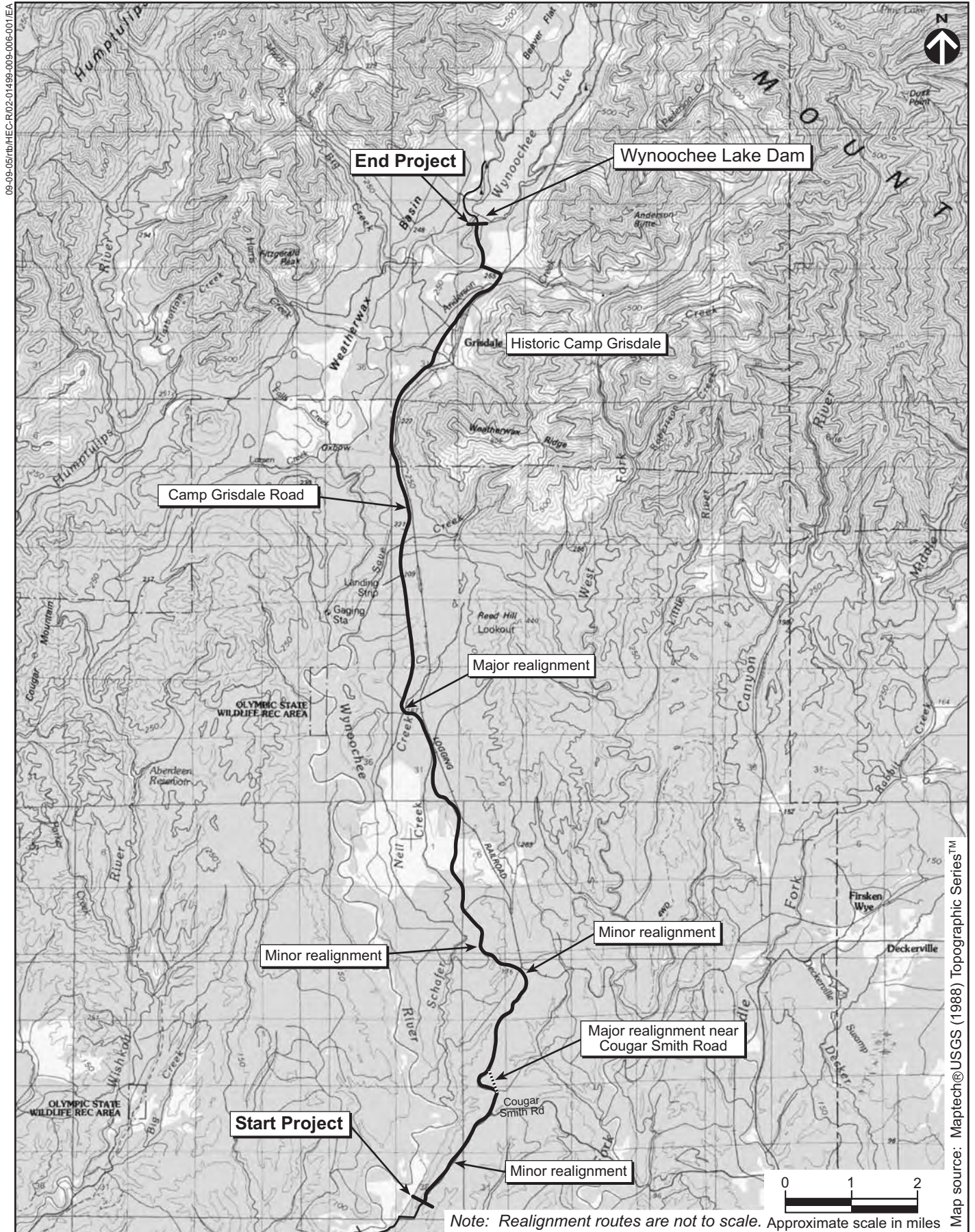


Figure 1-3. Camp Grisdale Road potential realignment areas.

Funding

The project would be funded by FHWA Forest Highway Program funds. The WFLHD administers the Federal Lands Highway Program, serving the needs of Oregon, Washington, Idaho, Montana, Wyoming, and Alaska. The WFLHD actively administers the surveying, design, and construction of forest highway system roads.

Jurisdiction and Land Ownership

Currently, Green Diamond Resource Company is the owner of the land over which Camp Grisdale Road travels. The road is currently on an easement. After construction, the Forest Service will become owner of the road and Grays Harbor County will assume maintenance.

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2.0 Purpose and Need

Summary

The purpose of this project is to provide a safer and more efficient transportation route for motorists traveling from the Montesano area and points beyond to Wynoochee Lake and surrounding forest areas. The proposed project would improve the operational safety, efficiency, and drivability of Camp Grisdale Road.

Need for the Project

Road Use

Camp Grisdale Road was constructed during the 1940s for timber harvesting access to the forest. The historic Camp Grisdale, located east of the project corridor and less than 2 miles south of Wynoochee Lake, was a major logging camp for the area (see Figure 1-1).

Camp Grisdale Road provides access to recreational areas and timber acreage. The road is the most direct access to over 100,000 acres of forest land, more than half of which lies within the Wynoochee Lake recreation area. Wynoochee Lake, near the north end of the project corridor, has a campground, boating facilities, and hiking trails. The road allows access to the Wynoochee Lake dam, Coho and Chetwood campgrounds, and several trailheads in both the Wynoochee and Satsop drainages.

Traffic Volumes

Much of the traffic in the project corridor is seasonal. The seasonal average daily traffic (i.e., the average number of vehicles that use the route each day between May and September, the recreational season) is about 350 vehicles, including logging trucks, recreational vehicles, and cars with boats or camp trailers (WFLHD 2004a). This traffic volume is projected to increase to 500 vehicles in the year 2019 (WFLHD 2004a). Improvements to the road may increase the seasonal average daily traffic volume, although the extent of increase cannot be accurately projected at this time.

Existing Road Conditions and Safety Deficiencies

The existing Camp Grisdale Road is extremely rough, with numerous potholes, and requires continual maintenance. The road is regularly graded, and gravel is added to maintain the surface. Over time, the gravel migrates to the sides of the road. In the summer when the weather is dry, dusty conditions are generated by roadway traffic, as well as by grading and maintenance activities. The dust impairs visibility. The roughness of the road damages tires, and driving

conditions are bumpy and unpleasant.

Emergency vehicles responding to calls in recreation areas served by Camp Grisdale Road currently must travel at reduced speeds to avoid potholes.

Wynoochee Lake has recreational facilities and an improved campground. The campground is used to capacity during the summer season (Mazur 2004a). Although the lake has boating facilities, visitors are reluctant to tow their boats on Camp Grisdale Road because of the potential for boat damage caused by loose gravel and rough road conditions.

The existing road is too narrow for the traffic conditions and the sizes of vehicles using it. Some curves are sharp. Heavy timber harvesting occurs in the area during the summer and large logging trucks must share the road with recreational traffic. The resulting mix of vehicle types creates safety concerns. The narrow driving lanes, absence of a painted centerline, and lack of shoulders make it difficult for large vehicles approaching from opposite directions to pass safely.

Many of the culverts that cross underneath the road are damaged or plugged, resulting in overflow conditions during storm events, and affecting general stability of the road.

Accident History

Traffic accident statistics are limited because Camp Grisdale Road is a remote forest road and collisions may go unreported. Most known accidents are caused by vehicles running off the road (WFLHD 1999).

Project Purpose

The project purpose is to provide a safer and more efficient transportation route for motorists traveling from the Montesano area to Wynoochee Lake and surrounding forest areas by:

- Improving the operational safety, efficiency, and drivability of Camp Grisdale Road.
- Improving drainage to alleviate overflow conditions during storm events and problems associated with the general stability of the road and its surface.
- Paving the road to eliminate the need to regularly regrade the road and add gravel. Paving would also eliminate dust generation, improving driving safety.
- Widening the curves, adding shoulders, and striping the pavement to define travel lanes would provide more room for large logging trucks to

safely pass approaching vehicles. Eliminating sharp curves would also accommodate logging vehicles, as well as passenger vehicles, more safely.

- Improving emergency vehicle access and response times.

In addition, the proposed road improvements are intended to improve compliance with several aquatic conservation strategy objectives (ACSOs) as set forth in the Northwest Forest Plan (Forest Service 1994) guidelines for the Forest Highway Program. The culvert replacements are intended to maintain and restore the physical integrity of the aquatic system, provide physically unobstructed routes for aquatic organisms, and maintain and restore network connectivity. The improvements at Schafer Creek would replace the existing culvert which currently constricts the channel with a bridge that restore the physical integrity of the aquatic system, natural stream flow, aquatic organism passage, and riparian habitat. The bridge would restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The proposed paving would help restore water quality by significantly reducing the airborne sediments that currently build up in wetlands and on corridor vegetation. Eliminating this sedimentation would restore and maintain the sediment regime under which aquatic ecosystems in the vicinity developed. These improvements, with proposed mitigation measures, are intended to comply with ACSOs and provide water quality, habitat, and fish passage benefits over the long term.

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3.0 Alternatives Considered

Six alternatives for this reconstruction project were jointly developed by the Federal Highway Administration, the Forest Service, and Grays Harbor County: a no-action alternative and five potential action alternatives. Due to operational safety, efficiency, drivability, cost, roadway length, or environmental impacts, four action alternatives were eliminated from further consideration. The remaining action alternative (the preferred alternative) and the no-action alternative are summarized in this chapter. This environmental assessment analyzes the potential effects of the no-action and preferred alternatives in Chapter 5, Impacts and Mitigation.

No-Action Alternative

The no-action alternative would maintain the road in its existing condition, continuing the current maintenance requirements for frequent grading and gravel placement. Air quality would continue to be affected by dust generation in the summer. Safer travel for logging trucks, commercial trucks, passenger cars, and recreational vehicles would not be provided. Tires, vehicles, and towed boats would continue to be subject to gravel damage. The County would continue to spend a minimum of \$125,000 per year for basic maintenance. Basic maintenance includes adding gravel, blading, and cleaning the currently undersized culverts which collect debris. The no-action alternative does not meet the project purpose and need.

Preferred Alternative

The preferred alternative is an action alternative, and it meets the project purpose and need. Under the preferred alternative, the road surface would be improved along the existing alignment for the most part, with some realignment of sharp curves. The road would have improved drainage, shoulders, pavement, and several new drainage crossings would be provided. The estimated construction cost for the preferred alternative is \$24 million in 2005 dollars, an increase of \$3 million over the \$21 million cost in 2002 dollars. The \$125,000 annual maintenance costs under the no-action alternative would be eliminated.

The proposed design speed would be 40 mph for the FR 22 segment. FDR 2294 will remain on its existing alignment and be paved. Design speed is a selected speed used to determine the various geometric design features of the roadway. It is the speed that most drivers would select for the given highway segment under favorable conditions (AASHTO 2004). Designs for realignment of substandard curves were evaluated for the following four areas:

- At the southern terminus and at 0.2 miles from the southern terminus of the project corridor (two minor realignments)
- Near Cougar Smith Road

- Between 3.2 miles and 5.1 miles north of the beginning of the project (two minor realignments)
- Near Neil Creek.

Because habitat loss would result from the realignment designs considered above, the degree of realignment was reduced from the original design to minimize impacts on habitat adjacent to the road.

Design speeds of 40 mph and 30 mph were considered for the dam access road, FDR 2294. These design speeds would result in adverse impacts on adjacent mature forest. Funding limitations reduced work on FDR 2294 to paving only. Abandoned sections of road would remain for access to Green Diamond Resource property. The exception is north of Neil Creek where the road would be recontoured for inclusion in a created mitigation wetland that connects wetlands that are on both sides of the road and a created mitigation area south of the stream.

To provide access to the AR 44 culvert for continued maintenance over time, a 10-foot-wide, gravel-surfaced access road from Camp Grisdale Road to the inlet of the culvert at the unnamed tributary of Anderson Creek would be constructed with the road improvements. This access road would generally follow the fill slope edge down to the culvert inlet.

No material sources have been identified. Staging and waste areas are available adjacent to the road within the construction limits, and in roadway obliteration areas. The Contractor may identify material and additional staging and waste sites, subject to review for compliance with federal requirements and mitigations specified in this document.

Stormwater Drainage System and Best Management Practices

The existing stormwater facilities along Camp Grisdale Road include infiltration swales and bioinfiltration swales draining directly to culverts or streams and wetlands. In some locations, infiltration trenches have been dug to control stormwater flow. Many of the 94 culverts along the alignment are undersized or damaged and are not functioning properly. The infiltration swales provide a low level of stormwater treatment and flow control. However, the system is overwhelmed during large storm events in some locations, particularly where culverts are not functioning properly or are poorly spaced, causing partial flooding of the roadway.

The drainage system along Camp Grisdale Road would be improved to meet the applicable requirements of the WSDOT (2004) *Highway Runoff Manual*. Roadside bioinfiltration swales would be constructed at the edge of the paved road, replacing the existing infiltration swales. Where feasible, infiltration swales would be directed to disperse stormwater to upland areas to allow infiltration of road runoff instead of direct discharge into streams and wetlands. Sheet flow dispersion would be used where feasible. Infiltration swales that have a slope greater than 4 percent would be rock-lined to reduce erosion and sedimentation of adjacent areas or water bodies. Rock lining would also aid infiltration of stormwater prior to discharge to water bodies.

Culverts would be repaired or replaced to accommodate stormwater flows and to prevent debris clogging and avoid associated maintenance requirements. Eight large culverts would be replaced with fish-passable structures: seven fish-passable culverts and one bridge. Fish-passable culverts would be constructed at ARs 9, 11, 19, 27 (Neil Creek), 30a, 30b, and 48. A bridge would replace the culvert at AR 25 (Schafer Creek). The designs of the replacement culverts and the bridge crossing (provided in the Biological Assessment [Herrera 2005c]) would meet fish passage design standards of the Forest Service, the U.S. Fish and Wildlife Service (USFWS), and the Washington Department of Fish and Wildlife (WDFW). Additionally, stream crossings where soils are disturbed would be restored. All disturbed soils that are not part of the final road would be restored to original grade and planted with native plants.

Traffic Control

To reduce construction time and costs, the current traffic control plan being considered would close the road to the public Tuesday through Thursday and open the road Friday through Monday. The road would be open Memorial and Labor Day weekends, and the Fourth of July week. Closure would be coordinated with Tacoma Power, Green Diamond Resource Company, Satsop Work Center, and Coho Campground. Signs will be posted alerting the public to closures.

Proposed Construction Schedule

Phase 1 of the proposed project includes the road segment from the southern terminus of the project to and including Schafer Creek. Phase 1 is expected to start in summer 2008, and take two spring/summer construction seasons to complete. Culvert replacements in aquatic resources that are documented to contain priority fish species would be constructed within a work window specified by USFWS and WDFW (July 15 to October 15).

Phase 2 of the project includes construction of the road from the northern side of Schafer Creek to the northern terminus of the project corridor. Phase 2 would start after Phase 1 is complete and construction is expected to require two construction seasons. Construction in marbled murrelet and spotted owl impact zones would be restricted to times as specified by USFWS. Construction of replacement culverts at streams that contain priority fish species would be completed during a work window specified by USFWS and WDFW (July 15 to October 15).

Alternatives Considered but Rejected

Corridor Alternatives

During early project development, three other route corridor alternatives were considered but rejected because of cost or environmental impacts. The alternatives considered but rejected are summarized below. The project identification report (WFLHD 1999) and the project checklist (WFLHD 2004a) provide additional discussion and figures for the alternatives considered but rejected. All cost figures provided are in 2002 dollars.

- The Matlock route starts at Shelton, travels west to Matlock, continues west on a new alignment, and intersects Camp Grisdale Road 4 miles south of the historic Camp Grisdale. The route is 4-8 miles longer than the preferred alternative and would cost approximately \$23 million.
- The Satsop River route goes north from Brady along the Satsop River, then west on Cougar-Smith Road, joining Camp Grisdale Road 14 miles south of Camp Grisdale. This route is 35 miles in length, approximately 5-7 miles longer than preferred alternative, and would cost approximately \$26 million.
- The Matlock/Cougar-Smith route begins at Shelton, proceeds west to Matlock, then south to Cougar-Smith Road, and intersects Camp Grisdale Road 14 miles south of Camp Grisdale, at a cost of approximately \$28 million. The route is 12.5 miles longer than the preferred alternative.

All of these routes bypass Wynoochee Valley Road and cross two forks of the Satsop River. At the river crossing locations, the bridges would require extensive repair. Although these alternatives meet the project purpose and need, the lengths would be greater and the impacts would be similar to the preferred alternative. The routes had no environmental or transportation benefits. These alternatives were eliminated due to lack of benefits and larger disturbance areas due to greater road lengths than the preferred alternative.

Railroad Grade Alternative

In addition to the three corridor alternatives, an alternative that would use an existing railroad alignment was evaluated. The railroad access to the historical Camp Grisdale, constructed by Green Diamond Resource Company (formerly the Simpson Timber Company), has segments that are no longer used. These segments were analyzed to compare the horizontal and vertical alignments with those of the existing Camp Grisdale Road. However, the railroad grade is narrower than the existing road, and construction on the railroad alignment would require more disturbance of soil and vegetation adjacent to the road than would improvement of the existing road. After analysis, WFLHD determined that the railroad alignment is not preferable to the existing roadway alignment.

Cost for construction of the railroad grade alternative would exceed the cost of construction on the existing road location with no notable improvement to vertical or horizontal alignments. Construction of the railroad segment alignments would cost approximately \$2.975 million, compared to approximately \$2.175 million for reconstruction of the existing segment of Camp Grisdale Road.

Although this alternative meets the project purpose and need, the environmental impact and cost would be greater than the Camp Grisdale Road alternative. This alternative was eliminated due to greater environmental impacts and cost.

4.0 Environmental Setting

This section describes the existing conditions for each element of the environment in the Camp Grisdale Road project corridor. A list of resource reports that are relevant to the environmental elements are provided in Appendix C.

The proposed project accesses and is partially located in the Olympic National Forest in western Washington. The Olympic National Forest encompasses 632,300 acres and is divided into two ranger districts that roughly encircle Olympic National Park. The proposed project is located in the southwestern corner of the Hood Canal Ranger District South. The project corridor lies on a plateau that is above the valley in which the Wynoochee River flows. The Wynoochee River originates in the steep southern flanks of the Olympic Mountains. It drains a 218-square-mile area and joins the Chehalis River at tide water near the City of Montesano. The terrain is relatively flat with some rolling elevation.

The project is about 25 miles inland from the Pacific Ocean with a commensurate maritime climate. The area receives between 100 and 180 inches of rain per year, and minimal snow that melts quickly. The temperatures are an average high of 60 degrees with an average low of 40 degrees.

Geology and Soils

The geology of the project area is dominated by volcanic bedrock; uplifted marine terraces; and glacial till, outwash, and moraines (USDA 1979). Volcanic bedrock (basalt) is most prominent in the northern portion of the project area. It is derived from underwater basalt flows that were brought above sea level by the subduction of the ocean crust under the continental crust. As the ocean crust slides under the continental crust underwater features, such as basalt flows and marine sediments, are scraped off the ocean crust, leaving substantial deposition above sea level. This was the formative process that created the Olympic Mountains. These sediments also included marine terraces (mostly siltstones and sandstones) that are most prominent in the southern portion of the project area. These marine terraces underlie much of the project area and are exposed by the down-cutting action of streams. These sediments appear to convey substantial ground water, as exposed faces contain perennial seeps. Glacial landforms and sediments are prominent throughout the project area.

Fourteen soils were mapped in and within 500 feet of the project corridor by the Soil Conservation Service (now the Natural Resources Conservation Service, NRCS) (USDA 1979). These soils are: Copalis silt loam, Grismar very gravelly silt loam, Halbert muck, Hapludands and Dystrudepts, Hoquiam silt loam, Le Bar silt loam, Lytell silt loam, Nemah silty clay loam, Norbdbby very gravelly loam, O'Brien silt loam, Seastrand variant muck, Willaby silt loam, Wishkah silty clay loam, and Zyzyl gravelly loam. Of these, Halbert muck, Nemah silty clay loam, and Seastrand variant muck are considered hydric soils by the NRCS (NRCS 1995). The

distribution and characteristics of these soils are described in the Camp Grisdale Road wetland delineation report (Herrera 2005a).

Soils within the project area are dominated by young soils (inceptisols) that formed in uplifted marine sediments, as well as sediments and landforms created by glacial action. Many of the glacially derived soils have a large proportion of volcanic parent material. This material weathered from basalt bedrock in the central and northern portions of the project area and was distributed widely by glacial outwash channels.

Water Resources

The project corridor (100 feet on either side of the centerline of the proposed alignment) lies within the Chehalis River watershed in water resource inventory area (WRIA) 22. The Chehalis River watershed covers approximately 2,700 square miles of forest and agricultural land and is the second largest watershed in Washington state. The lower watershed is 77 percent forest land and 23 percent agricultural and urban land. The upper watershed is 91 percent forest land; the remainder of the area is largely agricultural (Ecology 1996). Figure 4-1 outlines the streams and subwatersheds within the vicinity of the project corridor. The subwatersheds are hydrologic unit classifications (HUC units) that are discussed in subsequent sections of this document.

Surface Water

The project corridor lies within the lower Chehalis River watershed. The largest of the drainages within the area include the Wynoochee River, Anderson Creek, Save Creek, Neil Creek, and Schafer Creek (Figure 4-1). Including these drainages, the Camp Grisdale project corridor crosses 25 perennial streams, 21 intermittent drainage courses, and 45 wetland complexes. Streams and wetlands, or combinations of the two, are referred to as aquatic resources (ARs) in this environmental assessment (see fish habitat section for more information). Table 4-1 provides a list of streams, with flow types that were surveyed within the study area.

Rainfall within the study area varies greatly. In 2002, the northern end of the alignment at the Wynoochee Lake dam measured 163 inches per year, while only 9 miles south at the Elk Meadows gauge, rainfall measured 119 inches per year (Mazur 2004a). The general flow pattern for streams along the Camp Grisdale Road is determined by rainfall and moderate snowmelt patterns. Ninety percent of the rainfall occurs from October through May (Smith 2004; USGS 2004a). The streams in the study area therefore generally experience high flows during the winter months and dry up in the summer (Ecology 2004a). Wetlands are present throughout all segments of the project corridor.

Ninety-four culverts cross the roadways in the project corridor according to FHWA (Bowman 2004). Some of these culverts have deficient conveyance capacities and poor fish passage characteristics, and also require extensive maintenance (fish passability at culverts is further discussed in the fish habitat section).

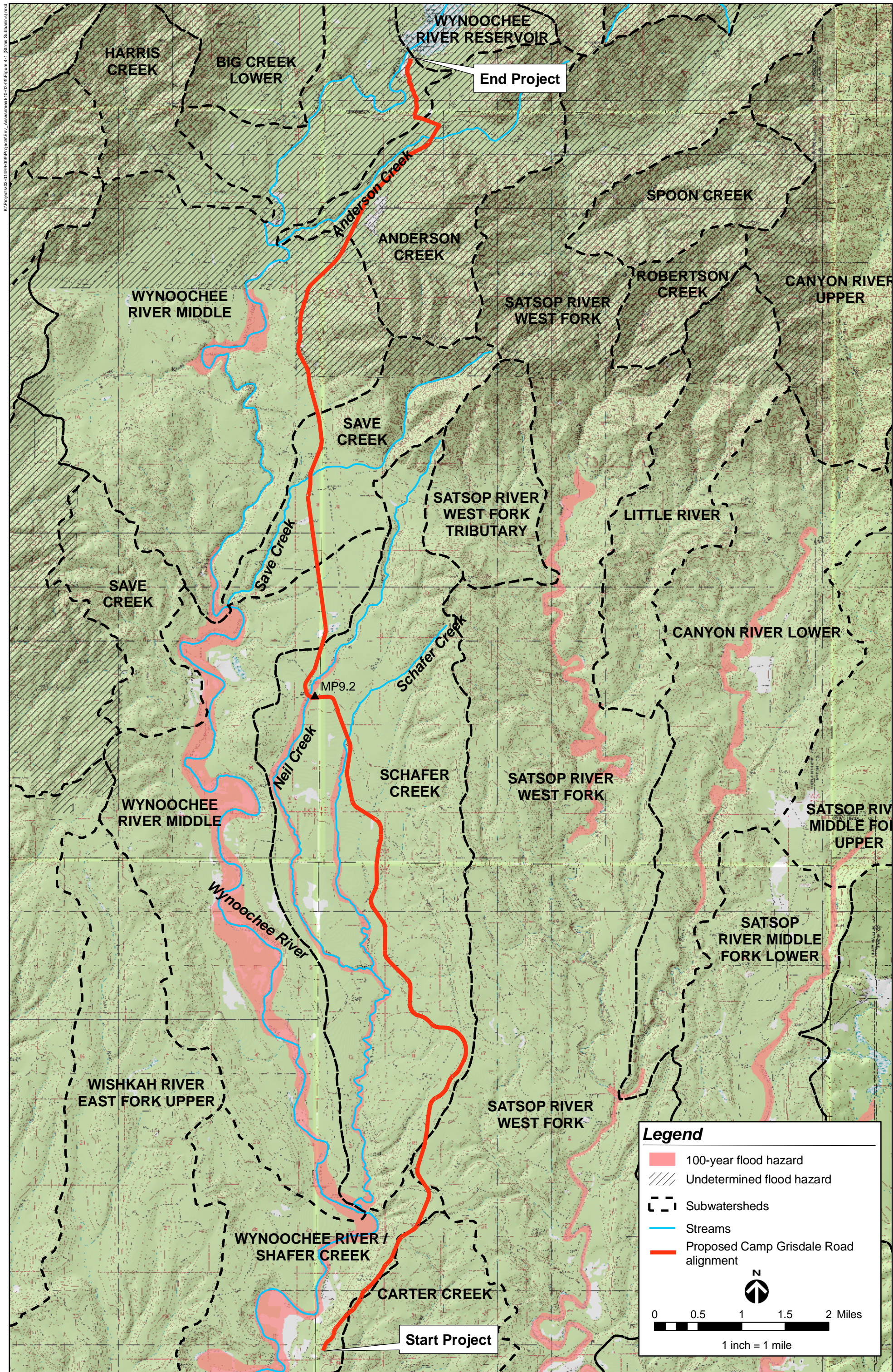


Figure 4-1. Subbasins and streams in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.

Table 4-1. Streams that cross the Camp Grisdale Road project corridor.

Consecutive Number	Habitat Unit	Stream Name or Identification	Location: Approximate Mileage from Start of Project Corridor	Streamflow Type
1	AR 5	Tributary of tributary of Schafer Creek (AR 6)	4.36	Intermittent
2	AR 6	Tributary of Schafer Creek (AR 25)	4.4	Perennial
3	AR 8	Tributary of Schafer Creek (AR 25)	4.9	Intermittent
4	AR 9	Tributary of Schafer Creek (AR 25)	5.1	Perennial
5	AR 11	Tributary of Schafer Creek (AR 25)	5.4	Perennial
6	AR 12	Tributary of Schafer Creek (AR 25)	5.5	Perennial
7	AR 13	Tributary of Schafer Creek (AR 25)	5.6	Perennial
8	AR 14	Tributary of Schafer Creek (AR 25)	5.9	Perennial
9	AR 16a	Tributary of Schafer Creek (AR 25)	6.1	Perennial
10	AR 16b	Tributary of Schafer Creek (AR 25)	6.2	Perennial
11	AR 16c	Tributary of Schafer Creek (AR 25)	6.2	Intermittent
12	AR 17	Tributary flows approximately 150 feet to Schafer Creek tributary (AR 22)	6.5	Intermittent
13	AR 19	Major tributary of Schafer Creek tributary (AR 22)	6.6	Perennial
14	AR 21	Possible tributary of major tributary of Schafer Creek (AR 22)	7.3	Perennial/wetland drainage
15	AR 22	Major tributary of Schafer Creek (AR 25)	7.5	Perennial
16	AR 23a	Tributary of Schafer Creek (AR 25)	7.7	Intermittent/wetland drainage
17	AR 23b	Tributary of Schafer Creek (AR 25)	7.7	Intermittent/wetland drainage
18	AR 24a & b	Tributary of Schafer Creek (AR 25)	8.0	Intermittent/wetland drainage
19	AR 24c	Tributary of Schafer Creek (AR 25)	8.1	Intermittent
20	AR 25	Riparian corridor of Schafer Creek	8.4	Perennial
21	AR 27b	Riparian corridor of Neil Creek (tributary of Schafer Creek [AR 25])	9.2	Perennial
22	AR 29a, b, & c	Tributary of Wynoochee River	9.9	Perennial/wetland drainage
23	AR 30a	Tributary of Wynoochee River	10.5	Intermittent/wetland drainage

Table 4-1 (continued). Streams that cross the Camp Grisdale Road project corridor.

Consecutive Number	Habitat Unit	Stream Name or Identification	Location: Approximate Mileage from Start of Project Corridor	Streamflow Type
24	AR 30b	Tributary of Wynoochee River	10.5	Intermittent
25	AR 31	Tributary of Save Creek (AR 35)	10.8	Intermittent
26	AR 34	Tributary of Save Creek (AR 35)	11.6	Perennial/wetland drainage
27	AR 35	Riparian corridor of Save Creek	11.8	Perennial
28	AR 36a	Tributary of Save Creek (AR 35)	12.2	Perennial
29	AR 36b	Tributary of Save Creek (AR 35)	12.2	Intermittent
30	AR 37a	Tributary of Wynoochee River	13.0	Perennial
31	AR 37b	Tributary of Wynoochee River	13.0	Perennial
32	AR 39a	Tributary of AR 39b	13.4	Perennial
33	AR 39b	Tributary of Wynoochee River	13.4	Perennial
34	AR 40	Tributary of AR 39b	13.7	Perennial
35	AR 41	Tributary of tributary of Wynoochee River	13.8	Intermittent
36	AR 43	Tributary of tributary of Wynoochee River	14.5	Intermittent
37	AR 44	Major tributary of Anderson Creek (AR 48)	14.9	Perennial
38	AR 45	Tributary of Anderson Creek (AR 48)	15.1	Intermittent
39	AR 46	Tributary of Anderson Creek (AR 48)	15.8	Intermittent/wetland drainage
40	AR 47	Tributary of Anderson Creek (AR 48)	16.1	Intermittent
41	AR 48	Riparian corridor of Anderson Creek	16.3	Intermittent
42	AR 49	Tributary of Anderson Creek (AR 48)	16.4	Intermittent/wetland drainage
43	AR 50a	Tributary of Wynoochee River	17.0	Perennial
44	AR 50b	Tributary of Wynoochee River	17.1	Perennial
45	AR 50c	Tributary of Wynoochee River	17.2	Intermittent
46	AR 50d	Tributary of Wynoochee River	17.3	Intermittent

Water quality data are generally unavailable for surface waters within the study area. None of the water bodies within the project corridor (or flowing into waters within the study area) are listed on the Washington Department of Ecology's Clean Water Act section 303(d) list of impaired water bodies (Ecology 2004b). The Wynoochee River, south of the study area at the confluence with the Chehalis River near Montesano, is listed for low flows and poor substrate for fish habitat. It is also listed for temperature and fecal coliform exceedances. However, the source of this pollution is likely from the City of Montesano and agricultural areas upstream of Montesano, and not from land within the study area, as the study area lacks residences, agricultural lands, or other likely sources of these pollutants. Airborne dust from the unpaved road currently settles in and adversely affects surface water adjacent to the road and also washes into surface water during rains.

Ground Water

Ground water data are limited for the study area (Ecology 2004c; USGS 2004b). A study of the surficial aquifers (ground water 100 feet deep or less) within the Chehalis River watershed attempted to define and explain surficial water quality within the watershed (Ecology 1998). The study revealed that the depth to ground water near the Wynoochee River approximately 10 miles north of the Chehalis River varied from less than 10 to 20 feet below land surface. This information, in conjunction with the permeable soils in the project vicinity, indicates the relative susceptibility of the aquifers to contamination (USDA 1979).

There are five known ground water wells within 1 mile of the project corridor:

- Wynoochee Lake Project (two wells approximately 400 feet west of the Wynoochee Lake dam)
- Satsop Wells Learning Lodge (one well approximately 4,000 feet [0.75 miles] east of AR 46)
- Bridge Water (one well approximately 3,500 feet [0.7 miles] east of AR 21)
- BRJ Water System (one well approximately 4,000 feet [0.75 miles] east of AR 9).

The two wells near the Wynoochee Lake dam were drilled by the U.S. Army Corps of Engineers (USACE) in 1969 to supply the dam and Forest Service picnic area; one well is approximately 99 feet deep and the other is approximately 380 feet deep. The deeper of the two wells was drilled as a backup well and has not been used for drinking water purposes. Tacoma Power manages the two wells and conducts water quality sampling. The 2004 inorganic and volatile organic compound tests indicate concentrations of iron and manganese as well as turbidity levels in the deeper well that exceed the maximum tolerances set by the Washington Department of Ecology (Tacoma Public Utilities 2004). While poor water quality in the deeper well is not

believed to be a reflection of water quality in the aquifer, the source of the contamination has still not been identified (Hahn 2004).

While the other three wells are public systems, no water quality information is currently available.

Floodplains

The evaluation of floodplains in the study area was based on a review of Federal Emergency Management Agency (FEMA) geographic information system (GIS) mapping applicable and available to the proposed project (FEMA 1996). Approximate boundaries of the 100-year floodplain and floodway (called flood hazard) for the drainages within the study area are outlined in Figure 4-1 (boundaries are approximate because the figure is not shown to a precise scale).

The 100-year floodplain is defined as the elevation that has a 1 percent chance of being equaled or exceeded each year and is estimated from historical streamflow records. The floodway, as defined by FEMA, is the channel of a stream and any adjacent floodplain areas that must be kept free of encroachment so that the 100-year flood flow can be carried without an increase in flood height greater than 0.3 meters (1.0 foot).

Most of the floodplains associated with water bodies that cross the Camp Grisdale Road project corridor are contained within the narrow river channels. Therefore, the project corridor does not contain large floodplain areas. Only one floodplain, Neil Creek, is crossed by the proposed road alignment in the project corridor (milepost 9.2) (Figure 4-1) (Ecology 2004d).

Wetlands

Forty-five aquatic resource areas were identified within the Camp Grisdale Road project corridor. These aquatic resource areas include wetlands, streams, or areas with both. Wetlands were delineated using the methods set forth in the 1987 Corps of Engineers wetland determination manual and the 1997 Washington Department of Ecology wetland delineation manual. Table 4-2 summarizes the results of field data collection and analysis. Included in this table are the location from the start of the project corridor (by mileage), type of aquatic resource, USFWS (Cowardin et al. 1979) and hydrogeomorphic (HGM) (Brinson 1993) wetland classification, Washington state rating (Ecology 1993; Hruby 2004), and dominant plant species. The locations and distribution of the aquatic resources are presented in Figure 4-2 (total of five sheets).

The following sections describe vegetation, soils, and hydrologic conditions that were observed during field investigations.

Table 4-2. Aquatic resources observed in the Camp Grisdale Road project area.

Aquatic Resource Number ^a	Mileage from Start of Project Corridor	Type of Aquatic Resource	USFWS Class ^b	Wetland HGM Class ^c	Washington State Rating for Wetlands (1993 Edition) ^d	Washington State Rating for Wetlands (2004 edition) ^e	Dominant Plant Species
AR 2	2.0	Wetland	PSS	Depressional closed	III	III	Sitka willow, salmonberry, red-osier dogwood, slough sedge, soft rush
AR 3	2.7	Wetland	PFO	Depressional outflow	III	II	Western redcedar, red alder, vine maple, sedges
AR 5	4.36	Stream/wetland	R4SB, PFO	Depressional outflow	III	II	Red alder, salmonberry, Sitka willow, small-fruited bulrush, slough sedge
AR 6	4.4	Stream/wetland	R3SB, PFO	Riverine flow-through	II	II	Red alder, salmonberry, hard hack, slough sedge, lady fern
AR 8	4.9	Stream/wetland	R4SB, PFO	Depressional outflow	II	II	Red alder, Sitka spruce, black cottonwood, salmonberry, slough sedge, small-fruited bulrush
AR 9	5.1	Stream/wetland	R3SB, PFO	Riverine flow-through	II	II	Red alder, salmonberry, lady fern, hedge nettle, manna grass
AR 10	5.2	Wetland	PFO	Depressional outflow	III	III	Red alder, black cottonwood, cascara, salmonberry, red-osier dogwood, slough sedge, creeping buttercup
AR 11	5.4	Stream/wetland	R3SB, PFO	Riverine flow-through	II	II	Red alder, salmonberry, stink currant, lady fern, slough sedge, stream violet
AR 12	5.5	Stream/wetland	R3SB, PFO	Riverine flow-through	II	II	Red alder, Sitka spruce, salmonberry, hard hack, lady fern, skunk cabbage, water parsley
AR 13	5.6	Stream/wetland	R3SB, PFO	Riverine flow-through	II	II	Red alder, Sitka spruce, salmonberry, lady fern, slough sedge, water parsley
AR 14	5.9	Stream/wetland	R3SB, PFO	Riverine flow-through	II	II	Red alder, devil's club, salmonberry, stink currant, small-fruited bulrush, slough sedge, piggy-back plant
AR 15	6.0	Wetland	PEM	Depressional outflow	III	IV	Dagger-leaf rush, soft rush, horsetail, salmonberry
AR 16 ^{a, b, c}	6.2	Stream/wetland	R3SB, PFO	Depressional outflow	II	II	Black cottonwood, red alder, salmonberry, hard hack, stream violet, slough sedge
AR 17	6.5	Stream	R4SB	N/A	N/A	N/A	Red alder, salmonberry, hedge nettle
AR 19	6.6	Stream/wetland	R3SB, PFO	Riverine flow-through	II	IV	Red alder, salmonberry, hedge nettle, lady fern, piggy-back plant, Oregon sorrel

Table 4-2 (continued). Aquatic resources observed in the Camp Grisdale Road project area.

Aquatic Resource Number ^a	Mileage from Start of Project Corridor	Type of Aquatic Resource	USFWS Class ^b	Wetland HGM Class ^c	Washington State Rating for Wetlands (1993 Edition) ^d	Washington State Rating for Wetlands (2004 edition) ^e	Dominant Plant Species
AR 21	7.3	Stream/Wetland	R3SB, PFO	Slope	II	IV	Red alder, salmonberry, small-fruited bulrush, lady fern, slough sedge
AR 22	7.5	Stream/wetland	R3SB, PFO	Riverine flow-through	II	II	Red alder, salmonberry, vine maple, red-osier dogwood, slough sedge, skunk cabbage
AR 23 ^{a,b}	7.7	Wetland	PFO	Depressional outflow	III	III	Black cottonwood, red alder, red-osier dogwood, hardhack, slough sedge, lady fern, small-fruited bulrush
AR 24 ^{a,b,c,d,e}	8.0	Stream/wetland	R4SB, PFO	Riverine flow-through	III	II	Western redcedar, cascara, salmonberry, stream violet, false lily-of-the-valley
AR 25 ^{a,b}	8.4	Stream/wetland	R3SB, PFO	Riverine flow-through	II	II	Red alder, salmonberry, skunk cabbage
AR 26	9.0	Wetland	PFO	Depressional outflow	II	II	Red alder, salmonberry, slough sedge, lady fern, stream violet
AR 27 ^{a,b,c}	9.2	Stream/wetland	R3SB, PFO	Riverine flow-through	II	II	Red alder, hardhack, salmonberry, American brooklime, stream violet
AR 28	9.7	Wetland	PFO	Depressional outflow	II	II	Red alder, salmonberry, slough sedge
AR 29 ^{a,b,c}	9.9	Stream/wetland	R4SB, PEM (70%), PSS (20%), PFO (10%)	Depressional outflow	II	I	Western redcedar, red alder, red-osier dogwood, Pacific ninebark, hardhack, vine maple, hedgenettle, Pacific water-parsley, sedges
AR 30 ^{a,b}	10.5	Stream/wetland	R4SB, PEM (20%), PFO (80%)	Riverine impounding	II	II	Red alder, Pacific willow, sedges
AR 31	10.8	Stream/wetland	R4SB, PFO	Depressional outflow	II	III	Red alder, western redcedar, salmonberry, American brooklime
AR 32	11.0	Wetland	PFO	Depressional outflow	III	II	Red alder, Pacific willow, salmonberry, slough sedge
AR 33	11.4	Wetland	PFO	Depressional outflow	III	II	Pacific willow, small-fruited bulrush, water sedge
AR 34	11.6	Wetland	PFO	Riverine flow-through	III	II	Red alder, salmonberry, trailing blackberry, tall mannagrass
AR 35	11.8	Stream/wetland	R3SB, PEM	Slope	III	IV	Soft rush, dagger-leaf rush, horsetail

Table 4-2 (continued). Aquatic resources observed in the Camp Grisdale Road project area.

Aquatic Resource Number ^a	Mileage from Start of Project Corridor	Type of Aquatic Resource	USFWS Class ^b	Wetland HGM Class ^c	Washington State Rating for Wetlands (1993 Edition) ^d	Washington State Rating for Wetlands (2004 edition) ^e	Dominant Plant Species
AR 36 ^{a,b}	12.2	Stream	R3SB	N/A	N/A	N/A	Red alder, salmonberry
AR 37 ^{a,b}	13.0	Stream/wetland	R3SB, PFO	Riverine flow-through	III	III	Red alder, salmonberry, stink currant, vine maple, lady fern, maidenhair fern, horsetail
AR 38	13.3	Wetland	PFO	Depressional outflow	III	III	Red alder, salmonberry, reed canarygrass
AR 39 ^{a,b}	13.4	Stream/wetland	R3SB, PFO	Riverine flow-through	II	III	Red alder, salmonberry, skunk cabbage, lady fern
AR 40	13.7	Stream/wetland	R3SB, PFO	Riverine flow-through	II	III	Red alder, stink currant, western corydalis, piggy-back plant
AR 41	13.8	Stream/wetland	R4SB, PFO	Riverine flow-through	III	III	Red alder, salmonberry
AR 42	13.9	Wetland	PSS	Slope	III	IV	Salmonberry, small-fruited bulrush, creeping buttercup
AR 43	14.5	Stream/wetland	R4SB, PFO	Riverine flow-through	III	II	Red alder, salmonberry
AR 44	14.9	Stream/wetland	R3SB, PFO	Riverine flow-through	III	II	Red alder, salmonberry, stink currant
AR 45	15.1	Stream/wetland	R4SB, PFO	Riverine flow-through	II	III	Red alder, stink currant, lady fern
AR 46	15.8	Stream/wetland	R4SB, PSS (20%), POW (80%)	Riverine impounding	II	II	Red alder, Sitka willow, salmonberry, stink currant, devil's club, maidenhair fern, lady fern
AR 47	16.1	Stream/wetland	R3SB, PFO	Riverine flow-through	III	III	Red alder, salmonberry
AR 48	16.3	Stream/wetland	R4SB, PFO	Riverine flow-through	II	II	Red alder, salmonberry
AR 49	16.4	Stream/wetland	R4SB, PFO	Riverine flow-through	II	II	Black cottonwood, red alder, salmonberry, stink currant, Pacific ninebark, manna grass
AR 50 ^{a,b,c,d}	17.0	Stream/wetland	R3SB, R4SB, PFO	Slope	II	III	Red alder, western redcedar, salmonberry, tall manna grass, colonial bentgrass, lady fern

^a Since the 2003 reconnaissance of the project corridor (Herrera 2003), ARs 1, 4, 7, and 20 have been found to be upland and are no longer included in the aquatic resources list.

^b USFWS wetland classification: palustrine forested (PFO), palustrine scrub/shrub (PSS), palustrine emergent (PEM), palustrine open water (POW), riverine intermittent streambed (R4SB), and riverine upper perennial streambed (R3SB) (Cowardin et. al. 1979).

^c Hydrogeomorphic (HGM) class based on Brinson (1993).

^d The Washington Department of Ecology has a four-tiered wetland rating system, Category I (highest quality) through Category IV. Streams are not included in this system and thus are designated N/A (not applicable) (Ecology 1993).

^e The Washington Department of Ecology rating system was revised during the investigation (Hruby 2004), and wetlands were rated again according to the revised edition.

Vegetation

Most forested wetlands in the project corridor are dominated by red alder (*Alnus rubra*), with occasional western redcedar (*Thuja plicata*) and Sitka spruce (*Picea sitchensis*). A typical shrub understory is dominated by salmonberry (*Rubus spectabilis*), with occasional stink currant, devil's club, and Pacific ninebark. The herbaceous understory is often composed of skunk cabbage (*Lysichiton americanum*), lady fern (*Athyrium filix-femina*), hedge nettle (*Stachys cooleyae*), and slough sedge (*Carex obnupta*).

Scrub-shrub wetlands within the project corridor are dominated by Pacific willow (*Salix lucida*), Scouler's willow (*Salix scouleriana*), red osier dogwood (*Cornus stolonifera*), and hard hack (*Spirea douglasii*).

Emergent wetlands, although rare in the project corridor, are composed of a distinctive mixture of native species. Slough sedge (*Carex obnupta*), water sedge (*Carex aquatilis*), small fruited bulrush (*Scirpus microcarpus*), American brooklime (*Veronica americana*), and tall manna grass (*Glyceria elata*) dominate these systems.

Common species at the edges of wetlands include western hemlock (*Tsuga heterophylla*), western redcedar (*Thuja plicata*), Sitka spruce (*Picea sitchensis*), vine maple (*Acer circinatum*), cascara (*Rhamnus purshiana*), devil's club (*Oplopanax horridus*), sweet coltsfoot (*Petasites frigidus*), stream violet (*Viola glabella*), redwood sorrel (*Oxalis oregana*), and Dewey's sedge (*Carex deweyana*).

Common upland species include Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), western redcedar (*Thuja plicata*), trailing blackberry (*Rubus ursinus*), salal (*Gaultheria shallon*), sword fern (*Polystichum munitum*), false lily-of-the-valley (*Maianthemum dilatatum*), and redwood sorrel (*Oxalis oregana*).

Soils

Most wetland areas contain mineral soils that are mottled in the upper soil layers, indicating a fluctuation in water tables between winter and summer seasons. Some of these wetland soils are underlain with gleyed mineral soils, indicating a high water table, while others are underlain with a dense glacial till or other aquaclude that perches water in the upper soil horizons. Some of the large wetland areas (e.g., AR 29) have deep organic soils, indicating long-term saturated conditions that persist year-round over a long period of time.

Hydrology

Wetland delineations were conducted during June and July of 2004; well after the end of the rainiest portion of the year. As a result, few of the wetlands were deeply inundated. However, sediment and vegetation deposits indicate that these areas experience extensive inundation during winter months. Sediment deposits also occur in some upland areas that contain hydrophytic vegetation. These sites tend to be in localized depressions or areas where

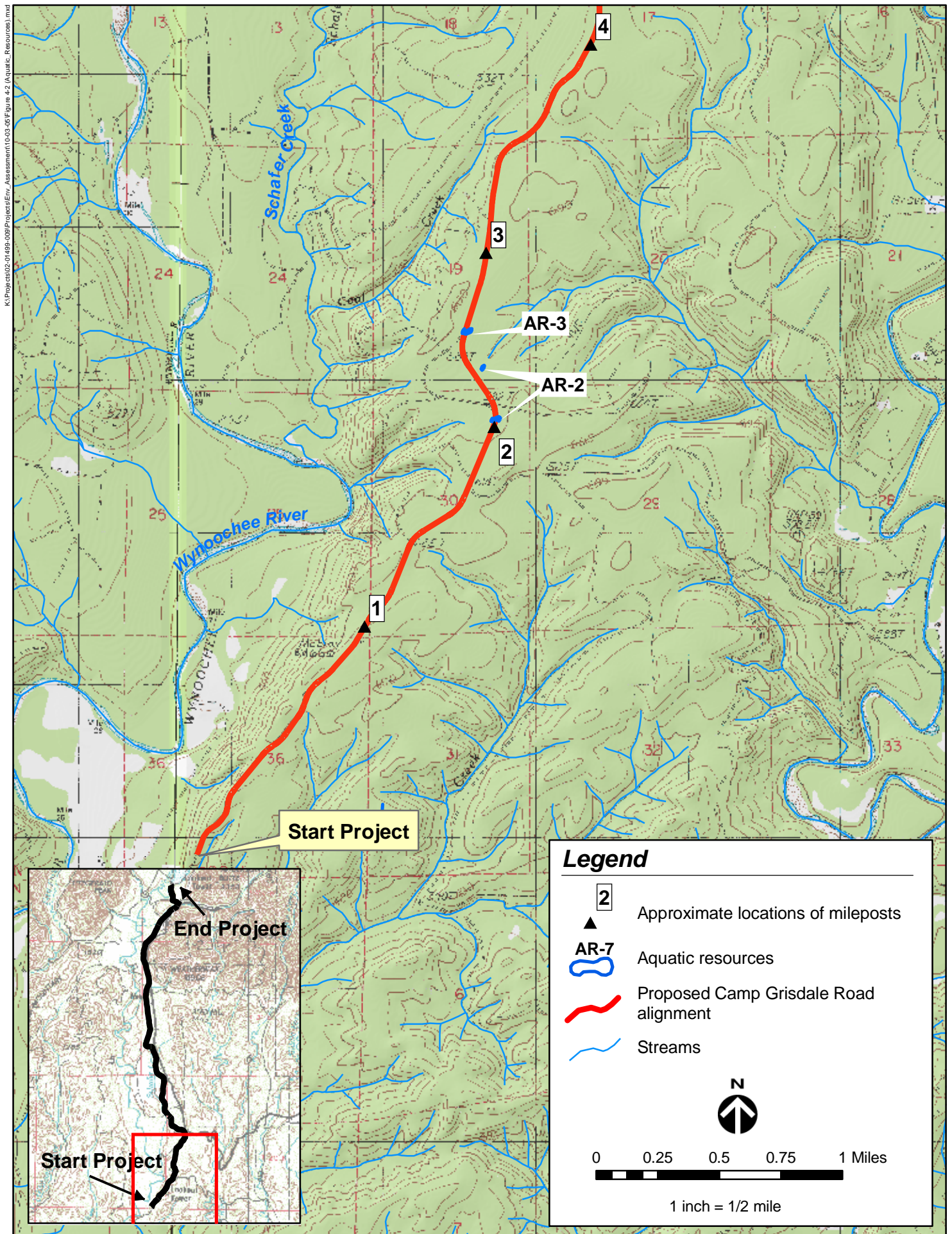
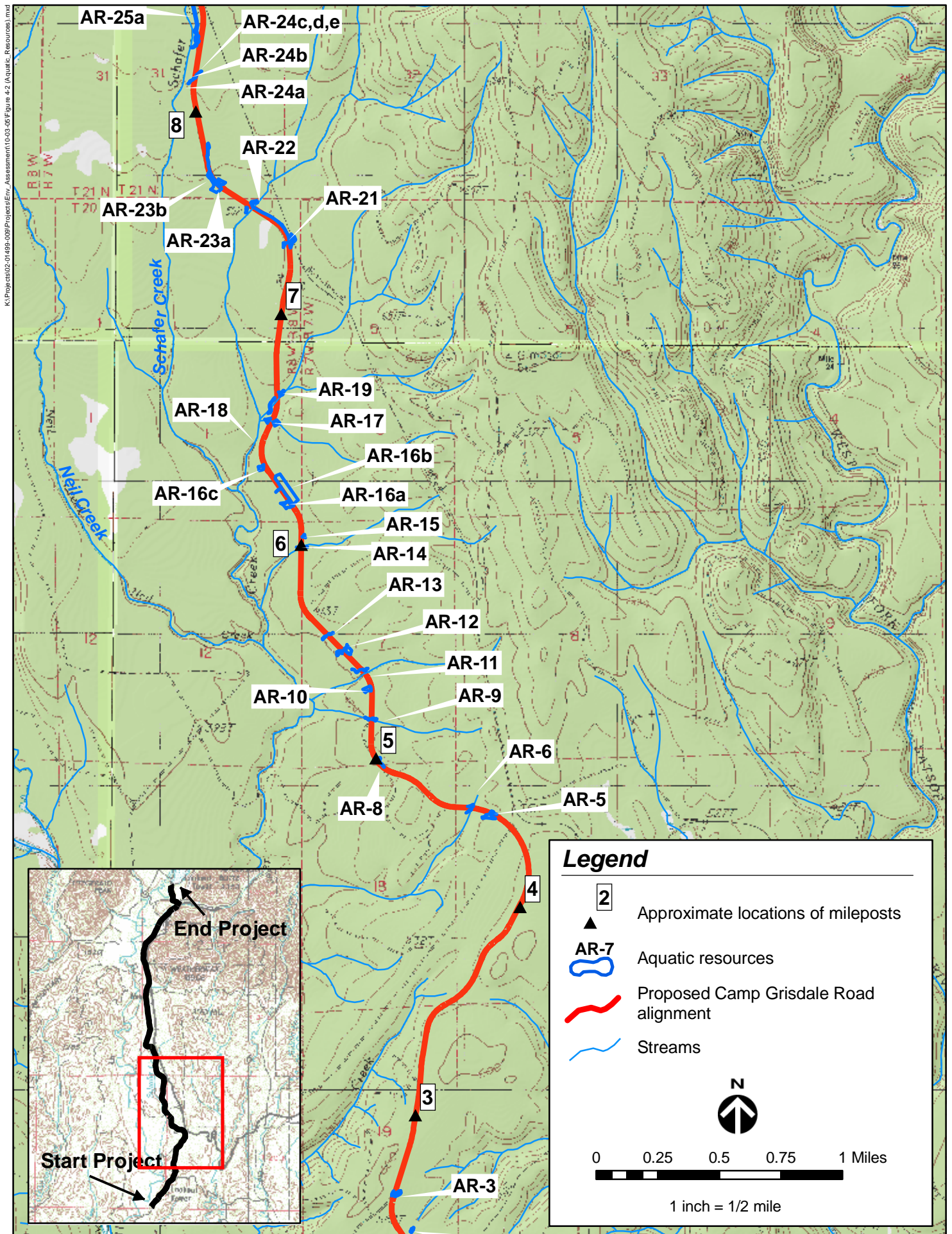


Figure 4-2, sheet 1 of 5. Aquatic resources within the Camp Grisdale Road project corridor, Grays Harbor County, Washington.



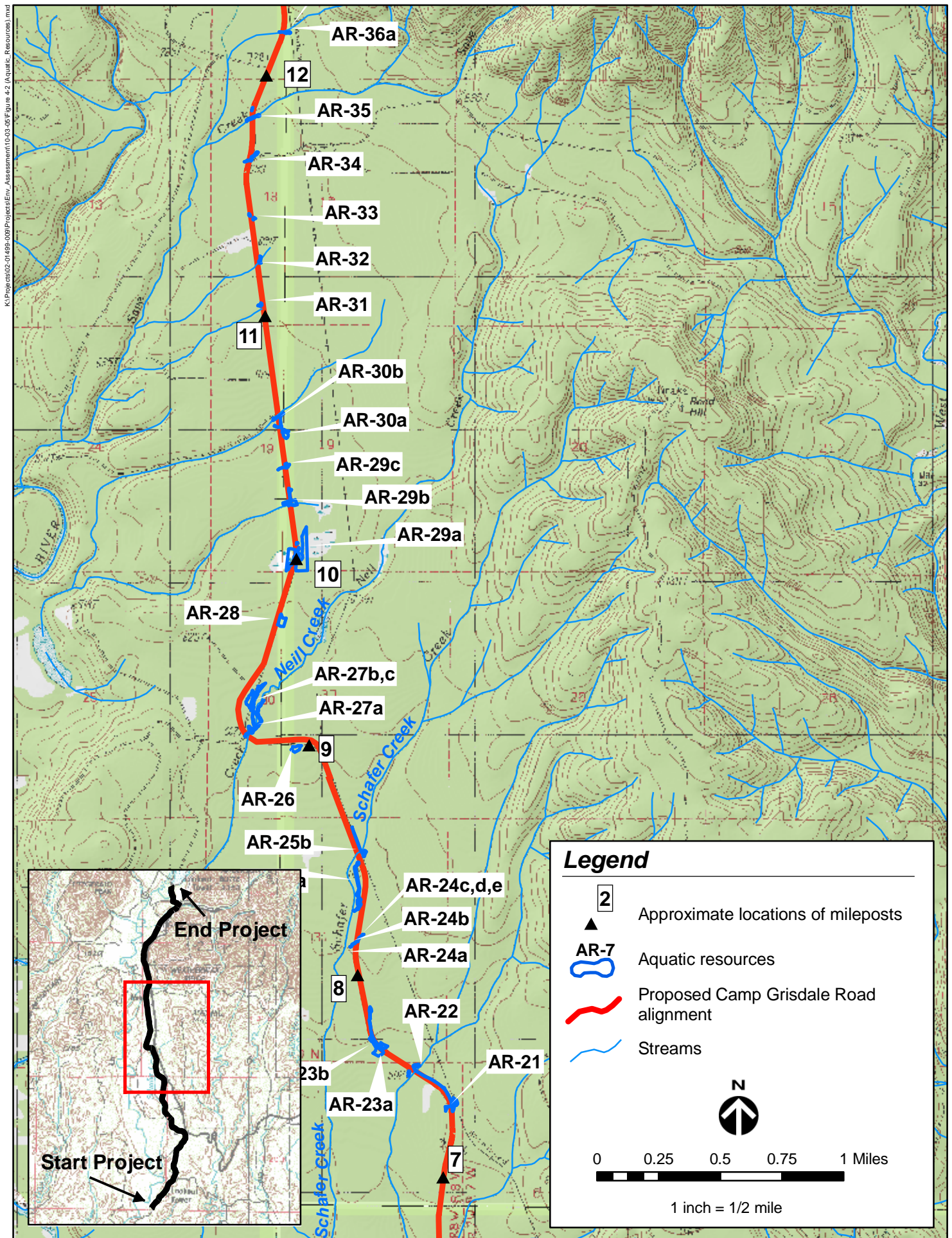


Figure 4-2, sheet 3 of 5. Aquatic resources within the Camp Grisdale Road project corridor, Grays Harbor County, Washington.

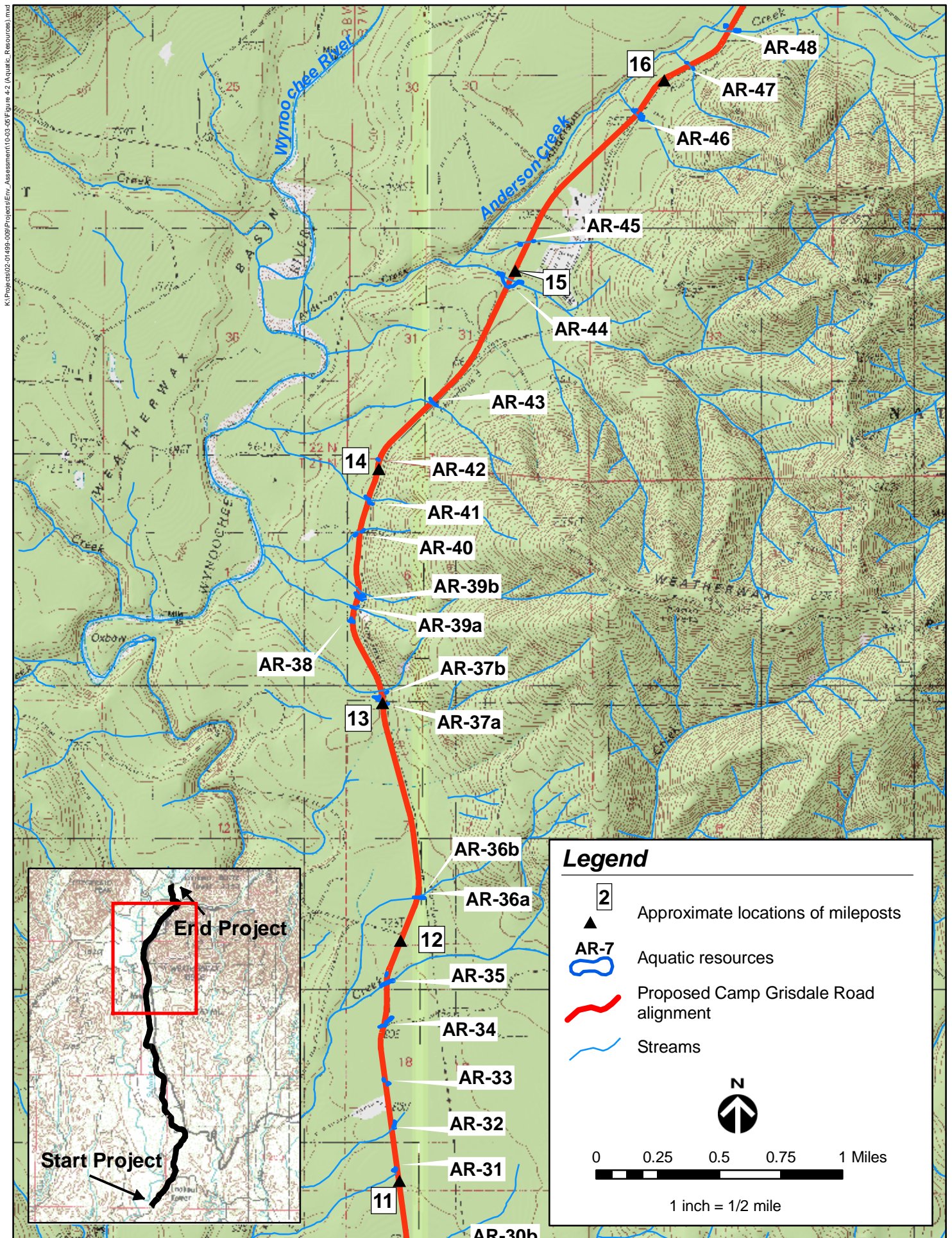


Figure 4-2, sheet 4 of 5. Aquatic resources within the Camp Grisdale Road project corridor, Grays Harbor County, Washington.

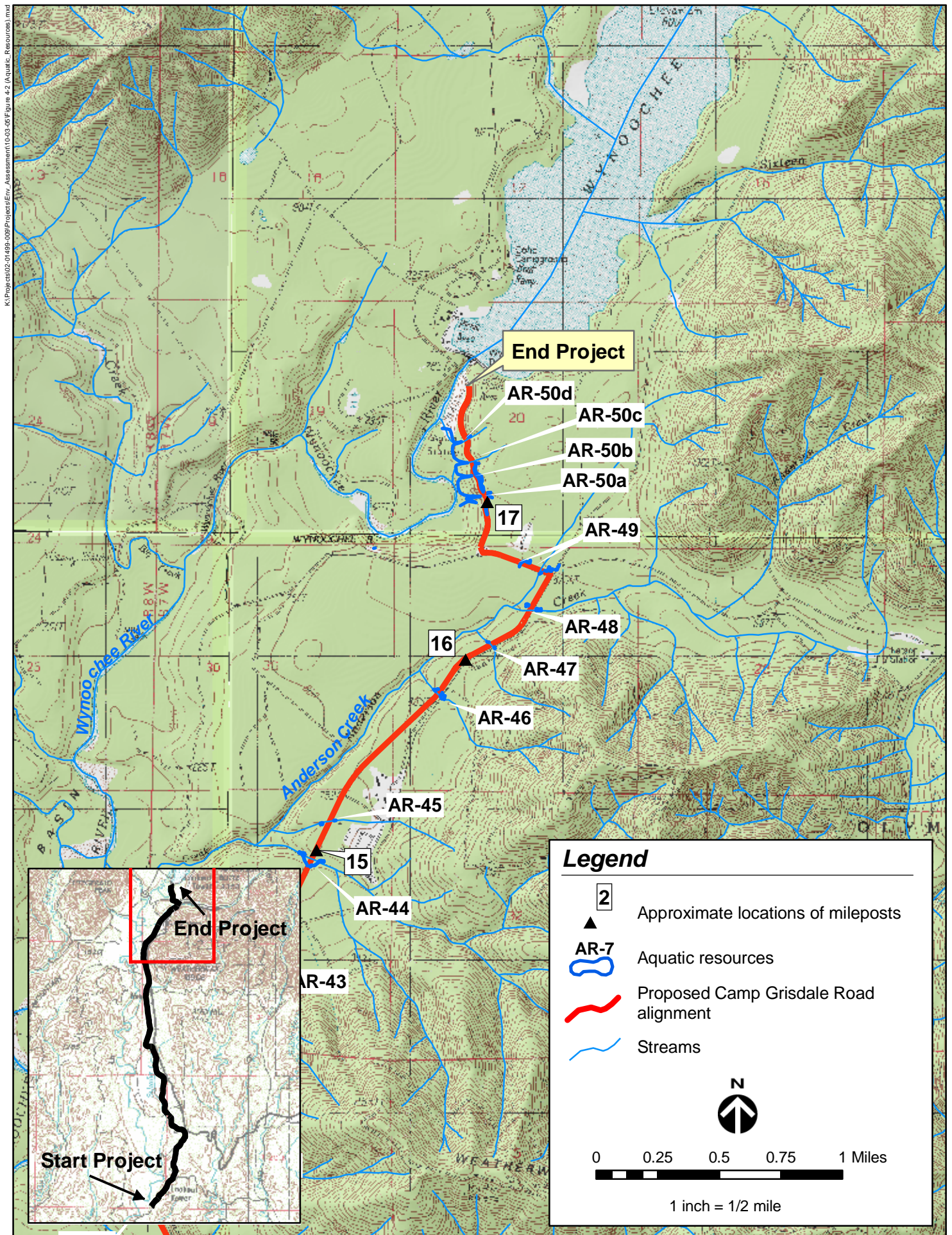


Figure 4-2, sheet 5 of 5. Aquatic resources within the Camp Grisdale Road project corridor, Grays Harbor County, Washington.

stormwater is impounded against the roadway. They do not contain hydric soils and thus are not considered wetlands.

Other Jurisdictional Waters

In addition to the wetlands described above, numerous streams occur within the project corridor. They are listed and described in Tables 4-1, 4-2, 4-6, and 4-7, and their locations are indicated in Figure 4-2. The conditions of these streams are described in detail in the environmental baseline section of the biological resources report prepared for the project (Herrera 2005b). All of these streams, as well as the extensive network of roadside ditches, cross-road water conveyances, and other features that act as tributaries of the existing stream network, may be considered *waters of the United States*, and may be under federal jurisdiction.

Vegetation

Terrestrial habitat resources within and adjacent to the project corridor are dominated by second-growth conifer forest with large trees and high tree density. Third-growth regenerating conifer stands are another dominant habitat type. Some mature old-growth habitat is located in the northern portion of the study area, and there are several clear-cuts adjacent to Camp Grisdale Road. These habitat types are described in more detail in the following sections and under the Wildlife section.

Several vegetation features were evaluated within the Camp Grisdale project corridor. The location and condition of late successional reserves and riparian reserves were evaluated within the study area on Olympic National Forest lands only. A list of Forest Service sensitive, Forest Service survey-and-manage, threatened, and endangered plant species was provided by the Forest Service (Appendix B). The presence of Forest Service sensitive and Forest Service survey and manage species, including vascular plants, mosses, and lichens, was evaluated through surveys within the portion of the project corridor that passes through Olympic National Forest (from milepost 13 north to the end of the project corridor). The presence of vascular plants with a federal or state listing or Forest Service-sensitive status was evaluated for the entire project corridor. The presence of noxious weeds was also evaluated for the entire project corridor.

Analysis of Existing Information

Late Successional Reserves

In a forestry context, *succession* refers to a series of dynamic changes in ecosystem structure, function, and species composition, during which one group of organisms succeeds another through stages over time. *Late successional habitat* is defined as late successional forest that provides habitat to late successional species. The forest seral stages (i.e., successional stages) of mature and old-growth age classes comprise late successional habitat.

The Northwest Forest Plan provides a network of designated late successional reserves on national forest lands to maintain late successional and old-growth habitat within ecosystems on federal lands for the long-term viability of affiliated species. The northern approximately 4 miles of the Camp Grisdale project corridor is located within the Quinault late successional reserve (Quinault North-RW 102 and Quinault South-RW 103) in the Quinault Ranger District, Olympic National Forest (Figure 4-3). This is part of a larger network of late successional forests, including the adjacent Olympic National Park's Colonel Bob Wilderness, Quinault recreation area, Quinault research natural area, and the Hood Canal South late successional reserve.

The Quinault late successional reserve is documented to contain viable mixtures of silver fir, western hemlock, Sitka spruce, and mountain hemlock. The Quinault North at present is composed of 57 percent late successional forest, and the Quinault South consists of 59 percent late successional forest. The remainder of the late successional reserve has been altered historically by timber harvest, fire, and wind disturbance. Tree stands within late successional reserves over 80 years of age are generally protected from harvest under the Northwest Forest Plan. Younger plantation or regeneration stands may be harvested through thinning if cuts are designed to enhance late successional characteristics.

Riparian Reserves

Riparian areas located on federal lands are protected under the Northwest Forest Plan (USDA Forest Service 1994). The Northwest Forest Plan designates riparian reserves for all permanently-flowing streams, lakes, wetlands, and intermittent streams. Riparian reserves include the body of water, inner gorges, all riparian vegetation, 100-year flood plain, landslides and landslide prone areas. Riparian reserve widths are based on some multiple of a site-potential tree height or a prescribed slope distance, whichever is greater. They are typically 150 feet (for wetlands, ponds, reservoirs, and non-fish-bearing streams) and 300 feet (for fish-bearing streams). Timber cutting is prohibited in riparian reserves on ONF land. Timber can be cut in riparian reserves to install new roads, but road construction must follow guidelines and standards set forth in the Northwest Forest Plan (see the biological resources report [Herrera 2005b]).

The water resources and fish habitat sections provide lists of non-fish-bearing and fish-bearing streams in riparian reserves. Eleven streams within wetlands (AR 43 through AR 50) on ONF land cross the project corridor in designated riparian reserves. These riparian areas have extra protection because they lie within designated LSR, where timber harvest is generally prohibited.

Forest Service Sensitive and State Sensitive Species

Forest Service survey-and-manage, Forest Service sensitive, and State sensitive species (including state endangered, threatened, sensitive and candidate species) potentially occurring within the study area are listed in Table 4-3 (USDA Forest Service 2003, USFWS (1986, 1997, 2003a), WDFW (1991, 2003)). Of the 35 identified sensitive plant species potentially occurring in the region, only 16 species have habitat requirements that could be met within the project corridor: tall agoseris (*Agoseris elata*), swamp sandwort (*Arenaria paludicola*), yellow-flowered

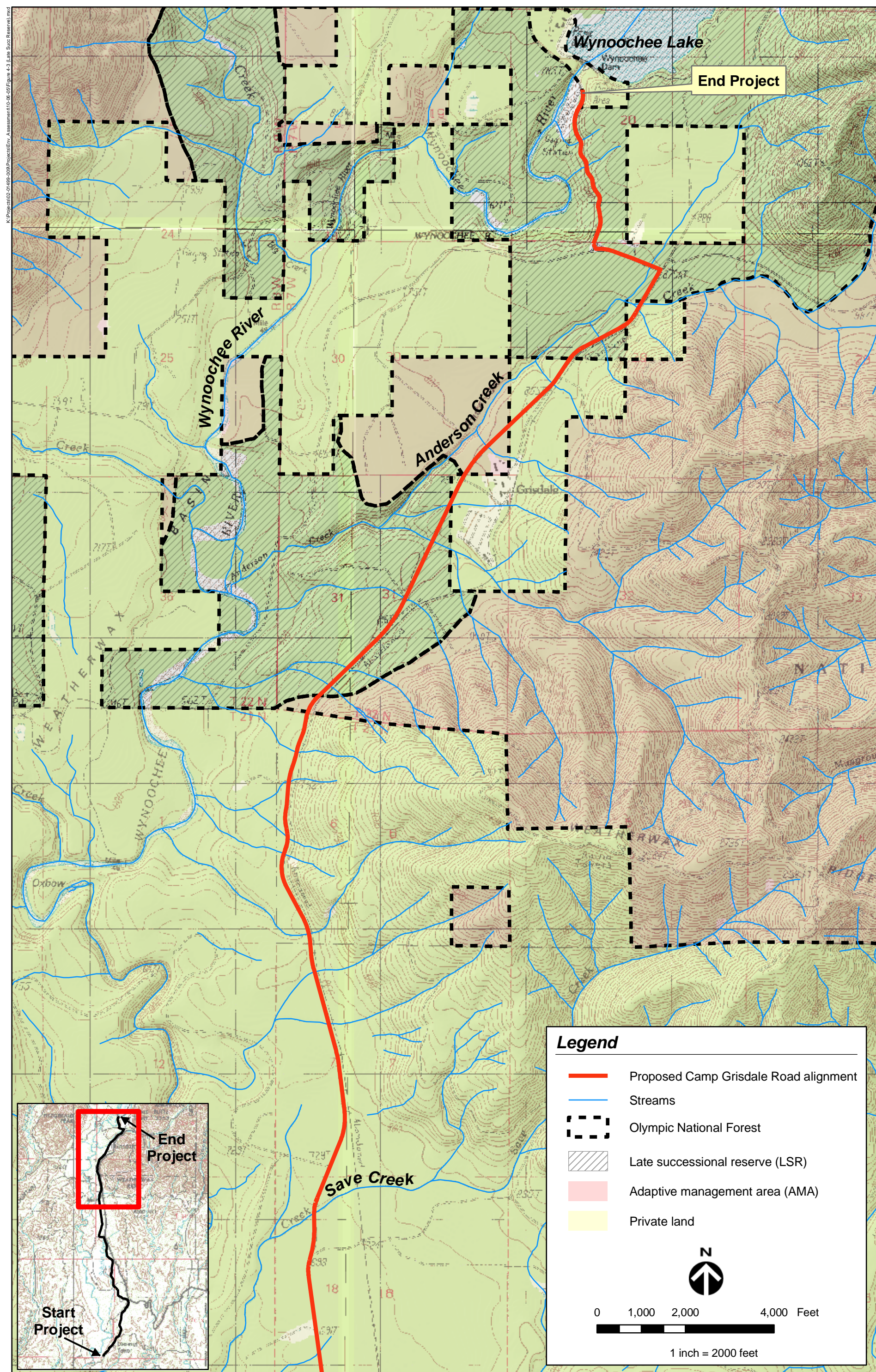


Table 4-3. Potential presence of listed and sensitive plant species in the vicinity of the Camp Grisdale Road project corridor.

Common Name	Scientific Name	Agency Status ^a			Preferred Habitat Type	Suitable Habitat in Study Area? ^b (if yes, unit is listed)
		USFWS	WDFW	Forest Service		
Tall agoseris	<i>Agoseris elata</i>	–	–	S	Low-elevation open areas	OF and CC
Swamp sandwort	<i>Arenaria paludicola</i>	–	–	S	Low-elevation wet areas	All aquatic resource areas
Siberian aster	<i>Aster sibiricus</i> var. <i>meritus</i>	–	–	S	Subalpine meadows	No
Olympic mountain milk-vetch	<i>Astragalus australis</i> var. <i>olympicus</i>	SOC	T	D	Subalpine open areas	No
Least bladdery milk-vetch	<i>Astragalus microcystis</i>	–	–	D	Subalpine scree	No
Triangular-lobed moonwort	<i>Botrychium ascendens</i>	SOC	–	S	Subalpine meadows	No
Yellow-flowered sedge	<i>Carex anthoxanthea</i>	–	–	D	Mid-elevation wet areas	All aquatic resource areas
Coiling sedge	<i>Carex circinata</i>	–	–	D	Subalpine scree	No
Blunt sedge	<i>Carex obtusata</i>	–	–	D	Subalpine and alpine meadows	No
Few-flowered sedge	<i>Carex pauciflora</i>	–	–	D	Low-elevation bogs	No
Several-flowered sedge	<i>Carex pluriflora</i>	–	–	S	Low to alpine elevations, wet areas	All aquatic resource areas
Russet sedge	<i>Carex saxatilis</i> var. <i>major</i>	–	–	S	Mid-elevation wet areas	All aquatic resource areas
Long-styled sedge	<i>Carex stylosa</i>	–	–	S	Subalpine wet areas	No
Golden chinquapin	<i>Chrysolepis chysophylla</i>	–	–	D	Low elevation, east Olympic Mountains; dry, exposed areas	No
Tall bugbane	<i>Cimicifuga elata</i>	SOC	T	S	Low-elevation forests	MOGC, SGCL, SGDL, STGD, STGMR, STGM, TGCR, TGCS, and TGDR
Lance-leaved springbeauty	<i>Claytonia lanceolata</i> var. <i>pacifica</i>	–	–	D	Subalpine rocky areas	No
Spleenwort goldenthread	<i>Coptis asplenifolia</i>	–	–	S	Low-elevation moist areas	All aquatic resource areas
Southerly frigid shooting star	<i>Dodecatheon austrofrigidum</i>	SOC	T	D	Subalpine rocky areas	No
Hoary draba	<i>Draba cana</i>	–	–	D	Subalpine dry areas	No
Long-stalked draba	<i>Draba longipes</i>	–	–	D	Alpine moist areas	No
Yellow dryas	<i>Dryas drummondii</i>	–	–	S	Alpine rocky areas	No
Wandering fleabane	<i>Erigeron peregrinus</i> var. <i>thompsonii</i>	–	–	S	Low-elevation bogs	No
Kamchatka bedstraw	<i>Gallium kamtschaticum</i>	–	–	D	Low-elevation moist areas	All aquatic resource areas
Branching montia	<i>Montia diffusa</i>	–	–	S	Low-elevation moist areas	All aquatic resource areas

Table 4-3 (continued). Potential presence of listed and sensitive plant species in the vicinity of the Camp Grisdale Road project corridor.

Common Name	Scientific Name	Agency Status ^a			Preferred Habitat Type	Suitable Habitat in Study Area? ^b (if yes, unit is listed)
		USFWS	WDFW	Forest Service		
Northern adder's tongue	<i>Ophioglossum pusillum</i>	–	T	S	Low-elevation moist areas	All aquatic resource areas
Northern oxtropis	<i>Oxytropis borealis</i> var. <i>viscida</i>	–	–	S	Subalpine scree	No
Northern grass-of-Parnassus	<i>Parnassia palustris</i> var. <i>neogaea</i>	–	–	D	Low-elevation moist areas	All aquatic resource areas
Brewer's cliff-brake	<i>Pellaea breweri</i>	–	–	D	Subalpine rocky areas	No
Alaskan plantain	<i>Plantago macrocarpa</i>	–	–	S	Low-elevation wet areas	All aquatic resource areas
Loose-flowered bluegrass	<i>Poa laxiflora</i>	–	T	S	Mid-elevation moist areas	All aquatic resource areas
Great polemonium	<i>Polemonium carneum</i>	–	–	S	Low-elevation open areas	OF and CC
Cooley's kumlienian	<i>Ranunculus cooleyae</i>	–	–	D	Subalpine moist areas	No
Menzies' burnet	<i>Sanguisorba menziesii</i>	–	–	S	Mid-elevation wet areas	All aquatic resource areas
Olympic cut-leaf synthyris	<i>Synthyris pinnatifida</i> var. <i>lanuginosa</i>	–	–	D	Subalpine scree	No
Great chain-fern	<i>Woodwardia fimbriata</i>	–	–	S	Low-elevation moist areas	All aquatic resource areas

^a Agency status: E = endangered, T= threatened, SOC= species of concern, D = documented presence, S = suspected presence, SM= state monitor species.

Shading indicates species without suitable habitat in the study area.

^b See Table 4-2:

AR = aquatic resource

CC = recent clear-cut

MOGC = mature old-growth conifer forest

OF = open field

SGCL = second-growth conifer forest

SGDL = second-growth deciduous forest

STGD = second/third-growth deciduous forest

STGM = second/third-growth mixed forest

STGMR = second/third-growth mixed forest, regeneration size

TGCR = third-growth conifer forest, regeneration size

TGCS = third-growth conifer forest from regeneration size to small-diameter trees

TGDR = third-growth deciduous forest from regeneration size to small-diameter trees.

Sources: Eder (2002), Leonard et al. (1993), USDA Forest Service (2003), USFWS (1986, 1997, 2003a), WDFW (1991, 2003).

sedge (*Carex anthoxanthea*), several-flowered sedge (*Carex pluriflora*), russett sedge (*Carex saxatilis* var. *major*), tall bugbane (*Cimicifuga elata*), spleenwort goldenthread (*Coptis aspleniifolia*), Kamchatka bedstraw (*Gallium kamtschaticum*), branching montia (*Montia diffusa*), northern adder's tongue (*Ophioglossum pusillum*), northern grass-of-Parnassus (*Parnassia palustris* var. *neogaea*), Alaskan plantain (*Plantago macrocarpa*), loose-flowered bluegrass (*Poa laxiflora*), great polemonium (*Polemonium carneum*), Menzies' burnet (*Sanguisorba menziesii*), and great chain-fern (*Woodwardia fimbriata*). None of these species were observed during the 2004 and 2005 surveys, but suitable habitat for them was identified.

Noxious Weeds

Biologists reviewed existing information on noxious weeds prior to conducting surveys. The species included in the noxious weed survey were provided by the Washington State Weed Control Board and Olympic National Forest. A complete list of these species is included in the biological resources report (Herrera 2005b).

Field Investigation Results

Forest Service and State Sensitive Species

Vascular Plants

No federally listed, Forest Service sensitive or State sensitive vascular plants were observed within the project corridor. With the exception of those species requiring bog or high-elevation habitats, the habitats preferred for all listed and sensitive species are found within the project corridor, although no listed or sensitive vascular plant species were observed during the site investigations. Common vascular plants observed within the study area are discussed below.

Vascular plant richness can be attributed to the two vegetation types that dominate upland areas: second-growth conifer forest (often dense western hemlock forest) and clear-cuts that are interspersed with wetlands and stream corridors. The dense canopy of second-growth conifer forests results in a dimly lit understory dominated by mosses, in which few vascular species can persist. Common species that are not listed or designated as sensitive are described here. Oxalis, cut-leaved goldenthread (*Coptis laciniata*), and sword fern are the species most commonly found in these forests. Within clear-cuts, vascular plants such as fireweed (*Epilobium augustifolium*), vine maple, trailing blackberry, cascara, a variety of exotic annual species, and planted timber stock dominate the landscape. Compared to the upland areas, the stream sides and wetlands contain a wider variety of vascular plants. These species include a variety of native trees and shrubs, as well as tall manna grass, stream violet, lady fern (*Athyrium filix-femina*), hedge nettle, coltsfoot, and dogbane (*Actea rubra*).

Bryophytes

Moss species dominate the understory in most of the forested areas surveyed. There was often complete coverage of the ground, as well as the boles and branches of trees to a height of 50 feet or more. Twenty-eight species of moss and fifteen species of liverwort were observed within the

study area, but outside of the project corridor. The Forest Service survey-and-manage moss species *Tetraphis geniculata* was observed in three locations within the study area.

Lichens

The Forest Service survey-and-manage species *Hypogymnia duplicata* occurred on the recently downed trees examined during the survey, as well as in litter fall collected throughout the Forest Service lands. *Bryoria* species were observed and collected, but none was identified as either of the two Forest Service survey-and-manage *Bryoria* species, *Bryoria spiralifera* or *Bryoria pseudocapillaris*. Also observed were *Platismatia lacunosa* and *Usnea longissima*. These two lichens were included on the original 1994 survey-and-manage list and were the focus of concern for riparian habitats.

Fungi

The host tree species for the Forest Service sensitive fungi species (*Bridgeoporus nobilissimus* [*Oxyporus nobilissimus*]) are noble and silver firs (*Abies nobilis* and *A. amabilis*), which were not observed in the study area. Small patches of a related species, grand fir (*Abies grandis*), occur in the southern portion of the study area, well south of the Forest Service property boundary. The absence of these host tree species was confirmed during vascular and nonvascular plant surveys. No further surveys were conducted for these fungi species.

Noxious Weeds

Of the noxious weed species surveyed, the following species have the greatest overall presence: Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), Scot's broom (*Cytisus scoparius*), foxglove (*Digitalis purpurea*), St. John's wort (*Hypericum perforatum*), hairy cat's ear (*Hypochaeris radicans*), oxeye daisy (*Chrysanthemum leucanthemum*), bird's-foot trefoil (*Lotus corniculatus*), narrowleaf plantain (*Plantago lanceolata*), tansy ragwort (*Senecio jacobaea*), and common tansy (*Tanacetum vulgare*). These species occur in mixed patches throughout the project corridor. They do not segregate into distinct portions of the study area, but rather occur in varying densities, reflecting differences in disturbance regime, available seed source, and competition for other native and nonnative species. These species are not mapped individually, but rather as a complex of opportunistic species that occupy the edges of the existing road, adjacent clear-cuts, and other openings throughout the study area.

Several other species occur in discrete portions of the study area: Himalayan blackberry (*Rubus armeniacus*), evergreen blackberry (*Rubus laciniatus*), orange hawkweed (*Hieracium aurantiacum*), and reed canarygrass (*Phalaris arundinacea*). The distribution of Himalayan blackberry, evergreen blackberry, orange hawkweed, and reed canarygrass is depicted in Figure 4-4 (two sheets).

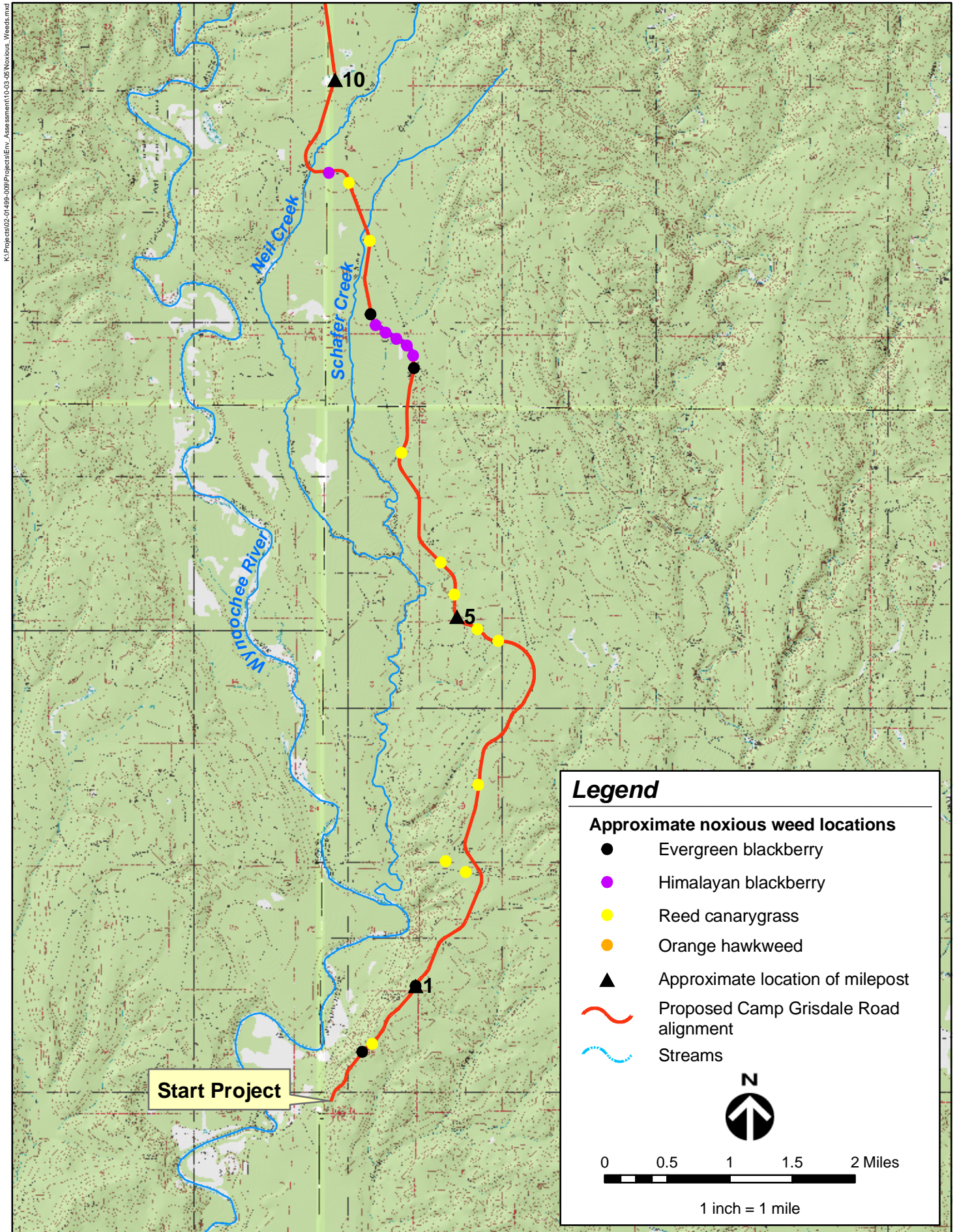


Figure 4-4, sheet 1 of 2. Himalayan blackberry, evergreen blackberry, orange hawkweed, and reed canarygrass locations along the Camp Grisdale Road project corridor, Grays Harbor County, Washington.

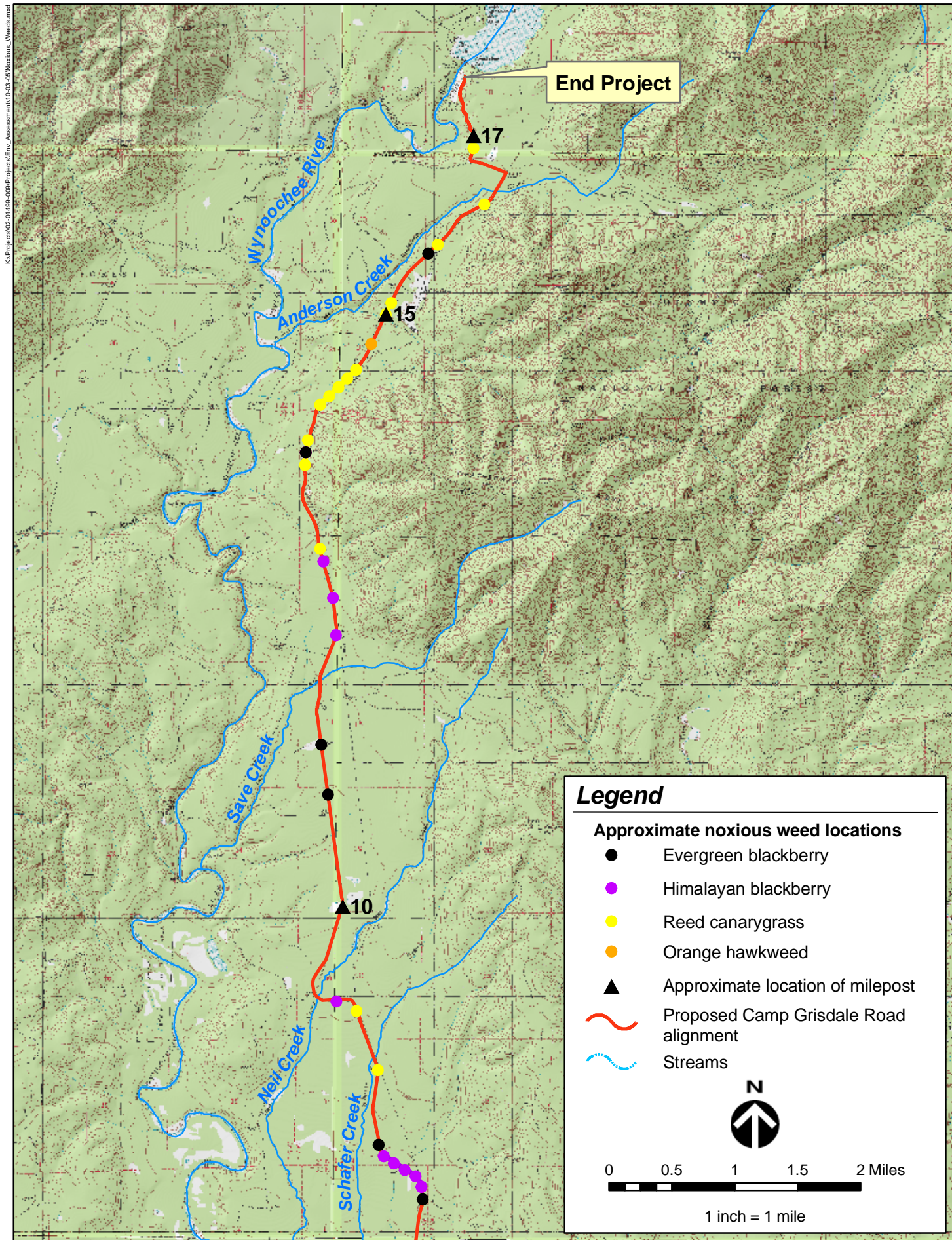


Figure 4-4, sheet 2 of 2. Himalayan blackberry, evergreen blackberry, orange hawkweed, and reed canarygrass locations along the Camp Grisdale Road project corridor, Grays Harbor County, Washington.

Scattered individual occurrences of English holly occur in forested areas just outside the Camp Grisdale Road project corridor. This species has the ability to colonize intact forested habitats, not merely the disturbed habitats favored by the other invasive species discussed in this section.

Native species dominate the landscape in areas outside the margin of the roadway, even in habitats that typically favor invasive species (e.g., emergent wetlands near the roadway).

Wildlife

Review of Existing Information

The WDFW Priority Habitats and Species Program (WDFW 2003, 2004a., 2007), the U.S. Fish and Wildlife Service (USFWS 2003a, 2004a, 2007), and the Forest Service, Olympic Region (USDA Forest Service 2003, 2004a, 2005, 2007) were consulted on the presence of federally listed threatened and endangered, Forest Service sensitive, and State designated (including endangered, threatened, and candidate species and species of concern) wildlife species within the vicinity of the project corridor (Appendix B contains agency correspondence regarding species). Mollusks and amphibians listed originally under the Forest Service survey-and-manage species program are now protected under the Forest Service sensitive species program. Northern spotted owl, marbled murrelet, and bald eagle are federally listed species and are discussed in the threatened and endangered species section. Table 4-4 lists federally listed species, Forest Service sensitive, and State sensitive species that may inhabit the study area.

Field Investigation Results

Species without Special Status

Wildlife is abundant in the vicinity of the Grisdale Road project corridor and within the study area, particularly on Forest Service lands, due to the highly diverse wetland, riparian, and forest wildlife habitats. The project vicinity contains many deciduous forest-dominated riparian and wetland corridors, set within a matrix of upland conifer forest, increasing the diversity of habitat in the study area and vicinity. Federally owned riparian areas are managed as protected riparian reserves under the Northwest Forest Plan, minimizing the timber cutting in these areas.

Active timber management on Green Diamond Resource Company lands located within the study area has modified wildlife habitat, and not as many species that are dependent on mature forests are expected to be present in these areas. These areas provide other habitats, such as cleared areas and dense brush that provide resources for a variety of species, including foraging for deer and elk, nesting and foraging for some birds, and hunting areas for raptors. Forested areas have been retained along most riparian areas on these active timberlands.

The Forest Service under the Northwest Forest Plan ecosystem management directive has designated the Wynoochee River watershed as a *key watershed*. The key watershed program has the primary goal of protecting at-risk or threatened and endangered salmonid stocks, and includes the protection of forest land within the watershed. The Forest Service has also

Table 4-4. Specifically designated wildlife species in the vicinity of the Camp Grisdale Road project corridor.

Species Type	Common Name	Scientific Name	Agency Status ^a			Preferred Habitat Type	Suitable Habitat in Study Area? ^b (if yes, unit is listed)
			USFWS	WDFW	Forest Service		
Amphibians	Cascades frog	<i>Rana cascadae</i>	SOC	–	–	Pools adjacent to streams in subalpine areas, rarely occurs below 2000 feet in elevation	No
	Cope's giant salamander	<i>Dicamptodon copei</i>	–	SM	D	Rocky stream bottoms and splash zones on stream banks	All stream ARs
	Olympic torrent salamander	<i>Rhyacotriton olympicus</i>			D	Near cold, clear streams and waterfalls	All stream ARs
	Tailed frog	<i>Ascaphus truei</i>	SOC	–	–	Cold, rocky streams	ARs 37-50
	Van Dyke's salamander	<i>Plethodon vandykei</i>	SOC	C	D	Splash zone of streams and waterfalls under rocks and woody debris	All stream ARs
	Western toad	<i>Bufo boreas</i>	SOC	C	–	Wetlands and forests	Entire project area
Birds	Aleutian Canada goose	<i>Branta canadensis leucopareia</i>	SOC	T	–	Lakes, large ponds, and wetlands with grassy areas for foraging.	No
	American peregrine falcon	<i>Falco peregrinus anatum</i>	SOC	SS	S	Coastal cliffs and rocks	No
	Bald eagle	<i>Haliaeetus leucocephalus</i>	T	T	D	Near freshwater and saltwater with adequate perching and nesting trees	MOGC, OF, and SGCL
	Common loon	<i>Gavia immer</i>	–	SS	D	Freshwater lakes and reservoirs near forests	Wynoochee Lake (outside of impact area)
	Ferruginous hawk	<i>Buteo regalis</i>	SOC	T	D	Steppe vegetation, nesting on high cliffs, bluffs, and utility poles	No
	Marbled murrelet	<i>Brachyramphus marmoratus</i>	T	T	D	Mature coniferous forests (nesting in trees with high, large limbs)	MOGC and SGCL
	Northern goshawk	<i>Accipiter gentilis</i>	SOC	C	–	Conifer forest, especially at higher elevations	No. Project is well below elevation of preferred habitat.
	Northern spotted owl	<i>Strix occidentalis</i>	T	E	D	Mature coniferous forests	MOGC and SGCL
	Olive-sided flycatcher	<i>Contopus cooperi</i>	SOC	–	–	Forested areas adjacent to clearings, burns, or open water	Entire project area
	Pileated woodpecker	<i>Dryocopus pileatus</i>	–	SS	I	Forests with abundant snags and downed wood.	MOGC and SGCL
	Streaked horned lark	<i>Eremophila alpestris strigata</i>	C	C	–	Native grasslands, prairies and beaches, in low-rainfall microclimates (NE Olympic Mountains, Fort Lewis prairies, and east of Cascade Mountains)	No
	Yellow-billed cuckoo	<i>Coccyzus americanus</i>	C	C	–	Riparian forests in dry-mesic climates	No (Well outside known range – Puget rain shadow and eastern WA, OR, CA)

Table 4-4 (continued). Specifically designated wildlife species in the vicinity of the Camp Grisdale Road project corridor.

Species Type	Common Name	Scientific Name	Agency Status ^a			Preferred Habitat Type	Suitable Habitat in Study Area? ^b (if yes, unit is listed)
			USFWS	WDFW	Forest Service		
Mammals	Columbia black-tailed deer	<i>Odocoileus hemionus</i>	–	–	I	Forests and open areas	Entire project area
	Fisher (West coast distinct population segment)	<i>Martes pennanti</i>	SOC	E	D*	Dense coniferous forests	Potential habitat exists (MOGC and SGCL), but population has been extirpated
	Long-eared myotis	<i>Myotis evotis</i>	SOC	–	–	Mature forests, especially adjacent to rock outcroppings	MOGC, SGCL
	Long-legged myotis	<i>Myotis volans</i>	SOC			Coniferous forest near water bodies, especially lakes	MOGC, SGCL, ARs and Lake Wynoochee
	Olympic pocket gopher	<i>Thomomys mazama melanops</i>	C	C	S	Grasslands and savannahs	No
	Pine marten	<i>Martes americana</i>	–	–	I	Mature coniferous forests	MOGC, SGCL
	Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	SOC	C	D	Coastal forests with caves, buildings, bridges, and old mines for roosts. Bridges also serve as foraging sites and as protected perches for big-eared bats to consume prey.	MOGC, possibly SGCL, bridge at AR 35 (Save Creek) for perching, roosting, and foraging.
	Western gray squirrel	<i>Sciurus griseus griseus</i>	SOC	T	–	Native grasslands, prairies and oak savannah.	No
Mollusks ^c	Puget oregonian snail	<i>Cryptomastix devia</i>	–	–	D, A ^d	Found in mature to late successional moist forest and riparian zones, under logs, in leaf litter, around seeps and springs, often associated with hardwood debris and leaf litter and/or talus. Often found under or near big-leaf maple and under sword fern growing under these trees, or on the underside of big-leaf maple logs. Canopy cover is generally high. Low to mid-elevations. Young individuals may be found under mosses on the trunks of big-leaf maple	MOGC, SGDL
	Hoko Vertigo snail	<i>Vertigo n. sp.</i>	–	–	S, A ^d	Arboreal, considered an old-growth forest and riparian species. May be found on smooth trunks and lower limbs of deciduous trees and shrubs, or in leaf litter under such vegetation within 200 meters of streams, seeps, or springs. This snail typically hangs upside down from limbs and trunks of trees and shrubs with smooth bark, where it may appear to be a small bud.	MOGC, SGCL, STGD, STGMR, STGM
	Malone's jumping slug	<i>Hemphillia malonei</i>	–	–	S, C ^d	Found in moist to wet forested habitats, usually with a mixed hardwood component. May be found on or under debris, often on the underside of bark lying on the ground.	MOGC, STGD, STGMR, STGM

Table 4-4 (continued). Specifically designated wildlife species in the vicinity of the Camp Grisdale Road project corridor.

Species Type	Common Name	Scientific Name	Agency Status ^a			Preferred Habitat Type	Suitable Habitat in Study Area? ^b (if yes, unit is listed)
			USFWS	WDFW	Forest Service		
Mollusks (continued)	Warty jumping slug	<i>Hemphillia glandulosa</i>	–	–	D, E ^d	Found in moist to wet forested habitats, usually with a mixed hardwood component. May be found on or under debris, often on the underside of bark lying on the ground.	MOGC, STGD, STGMR, STGM
	Burrington's jumping slug	<i>Hemphillia burringtoni</i>	–	–	D, E ^d	Found in moist to wet forested habitats, usually with a mixed hardwood component. May be found on or under debris, often on the underside of bark lying on the ground.	MOGC, STGD, STGMR, STGM
	Blue-gray tailed slug	<i>Prophysaon coeruleum</i>	–	–	S, A ^d	Found in a wide range of moist and mixed conifer forests. In open or dry areas, usually located in sites with relatively higher shade and moisture levels than those of the general forest habitat. Typically found in moist plant communities such as big-leaf maple and sword fern. This slug is usually associated with leaf and needle litter, wood chips from decomposing logs, mosses, and is known to browse on mycorrhizal fungus species.	MOGC, SGCL, SGDL, STGD, STGMR, STGM, TGCR, TGCS, TGDR
Insects	Makah's copper (butterfly)	<i>Lycaena mariposa charlottensis</i>	SOC	C	–	Forest openings and bogs with ericaceous plant species (e.g. huckleberries, heathers, etc.).	Limited, due to lack of bogs
	Oregon silverspot (butterfly)	<i>Speyeria zerene hippolyta</i>	T	E	–	Conifer forests, sagebrush, coastal meadows and dunes. Violets are caterpillar hosts.	Yes, although currently occurring only in Oregon

^a Agency status: E = endangered, T = threatened, C = candidate, SOC = species of concern, SS = WA state sensitive, D = documented presence, D* = documented historical presence, but extirpated, S = suspected presence, I = Olympic National Forest indicator species, SM = state monitor species. A dash (–) means that this agency does not have jurisdiction over this particular species.

^b See Table 4-2, Figure 4-5:

CC = recent clear-cut

MOGC = mature old-growth conifer forest

OF = open field

SGCL = second-growth conifer forest

SGDL = second-growth deciduous forest

STGD = second/third-growth deciduous forest

STGM = second/third-growth mixed forest

STGMR = second/third-growth mixed forest, regeneration size

TGCR = third-growth conifer forest, regeneration size

TGCS = third-growth conifer forest from regeneration size to small-diameter trees

TGDR = third-growth deciduous forest from regeneration size to small-diameter trees.

Sources: Eder (2002), Leonard et al. (1993), USDA Forest Service (2003, 2005, 2007), USFWS (1986, 1997, 2003a, 2007), WDFW (1991, 2003, 2004a, 2007).

^c Former Forest Service survey and manage species.

^d A = Rare. Manage all known sites. Predisturbance surveys are required. Strategic surveys are required.

B = Rare. Manage all known sites. Strategic survey required.

C = Uncommon. Manage high-priority sites. Predisturbance surveys are required. Strategic surveys are required.

E = Listed as endangered by the state.

designated federally owned lands along the project corridor as *late successional reserves* (LSR), where old-growth forest habitat is protected (see discussion in vegetation surveys section). These two protective designations have resulted in the presence of large areas of contiguous mature forests, which are especially important to wildlife for cover, breeding, and foraging across the landscape. LSR is located on national forest lands within the northern 4.5 miles of the project corridor.

The low-elevation forests within the study area are dominated by Douglas-fir and western hemlock. Species richness increases with vegetation height among all taxa, except for the taxon of reptiles (Johnson and O'Neil 2001). Bird species richness and use, in particular, increases with increased vegetation height, increased canopy layers, and successional stage.

Typical wildlife species that use the habitats in this area include mammals such as the Roosevelt elk, black-tailed deer, black bear, bobcat, cougar, coyote, raccoon, beaver, mountain beaver, skunk, porcupine, forest bat, Douglas squirrel, Townsend's chipmunk, and numerous small rodents. Elk, deer, black bear, bobcat, coyote, raccoon, beaver, mountain beaver, bats, Douglas squirrel, chipmunks, and a wide variety of birds were observed during site visits in 2003, 2004, and 2005. Elk and deer wintering habitat has been identified in the study area by the Forest Service. A list of expected and observed wildlife species (including scientific names) is included in Appendix E.

The project corridor and study area are used extensively by Roosevelt elk. Some herds remain within the lowlands that surround the project corridor throughout the year, while other herds use mountainous habitats within Olympic National Forest and Olympic National Park from spring through fall, using areas within the study area as wintering habitat. One herd occupies the area near the Wynoochee Lake dam. This herd had utilized the riparian forest upstream of the dam (now inundated by the waters of Wynoochee Lake). As mitigation for the loss of this forest, Tacoma Power purchased the riparian forest that occurs immediately downstream of the Wynoochee Lake dam to provide long-term habitat for this elk herd.

Elk wintering habitat is also present in patches elsewhere within the study area and crosses the project corridor in five places. The areas of elk wintering habitat are depicted in Figure 4-5 (total of nine sheets). Wintering habitats provide elk herds with physical protection from rain and wind, winter forage, and access to adjacent habitats.

Wetlands, riparian areas, and the surrounding forest support numerous amphibians (e.g., frogs and salamanders), reptiles (e.g., snakes), and invertebrates (e.g., slugs, snails, and insects). Wildlife species that have been documented or expected to occur in the vicinity of the project corridor are listed, including their scientific names, in Appendix E. Amphibians and reptiles that typically use forest habitat in the study area include the northwestern salamander, long-toed salamander, rough-skinned newt, ensatina, western redback salamander, tailed frog, western toad, Pacific chorus (tree) frog, northern alligator lizard, Puget Sound garter snake, and northwestern garter snake. During site visits in 2003, 2004, and 2005, project biologists observed red-legged frog, rough-skinned newt, Pacific chorus frog, ensatina, Olympic torrent salamander, Cope's giant salamander, western toad, northwest salamander, and northwestern garter snake.

Additionally, both migratory and resident waterfowl use the streams, ponds, lakes, and other aquatic habitats in the study area. A great number of bird species are associated with or require riparian and wetland habitats in the Wynoochee River basin. As a subset of this ecological guild, neotropical migrants (e.g., the willow flycatcher, yellow warbler, yellow-breasted chat, red-eyed vireo, and Vaux's swift) continually exhibit declining population trends in this region. Other species that are marsh obligates include the Virginia rail, sora rail, and marsh wren. Harlequin duck, a USFWS species of concern, is discussed in the sensitive species section below.

Forest Service Sensitive and State Monitor Species

The WDFW Priority Habitats and Species Program (WDFW 2003, 2004a), the U.S. Fish and Wildlife Service (USFWS 2003a, 2004a), and the Forest Service, Olympic Region (USDA Forest Service 2003, 2004a, 2005) were consulted for the presence of listed and sensitive wildlife within the study area. Table 4-4 lists all of the endangered and threatened wildlife species, Forest Service sensitive, species of concern, and state monitor wildlife species potentially occurring within the study area that are identified by state or federal agencies. The table identifies the preferred habitat type for each species and indicates the presence of suitable habitat (and identification of habitat units) within the study area. Figure 4-5 shows the locations of the terrestrial habitat types associated with the species identified in Table 4-4.

Salamanders

Forest Service and State sensitive salamander species identified by WDFW (2003, 2004a), USFWS (2004a), and the Forest Service (2004a) are Van Dyke's salamander (*Plethodon vandykei*), Cope's giant salamander (*Dicamptodon copei*), and Olympic torrent salamander (*Rhyacotriton olympicus*). All of these species have known occurrences within the study area, in habitats similar to those found in the project corridor. Van Dyke's salamanders and Cope's giant salamanders are known to occur in the Wynoochee River watershed, in tributaries of the Wynoochee River. Olympic torrent salamanders are known to occur in the Satsop River watershed, directly east of the project corridor, on tributaries of the Satsop River (WDFW 2003, 2004a; USDA Forest Service 2004a). All of these species require cold flowing water, waterfalls, and splash zones of streams. These habitat types are abundant mostly within the northern portion of the project corridor, typically associated with the many Wynoochee River tributaries that are crossed by Camp Grisdale Road. In many areas stream erosion has exposed sandstone and other sedimentary bedrock. These exposed bedrock faces are often the sites of perennial springs and seeps, as the bedrock often confines ground water within the project corridor, releasing it where the bedrock is exposed. This provides favorable habitat for several salamander species.

There were confirmed detections of two sensitive salamander species during surveys in 2004 and 2005, Cope's giant salamander and Olympic torrent salamander. Both of these species were encountered in AR 50, a ground water spring and wetland complex south of the Wynoochee Lake dam and on benches above the Wynoochee River. Two Cope's giant salamander larvae and one adult male Olympic torrent salamander were observed in cold, flowing water, near ground water springs. In addition, numerous other amphibians were observed, including Pacific chorus frog (*Hyla regilla*), red-legged frog (*Rana aurora*), rough-skinned newt (*Taricha*

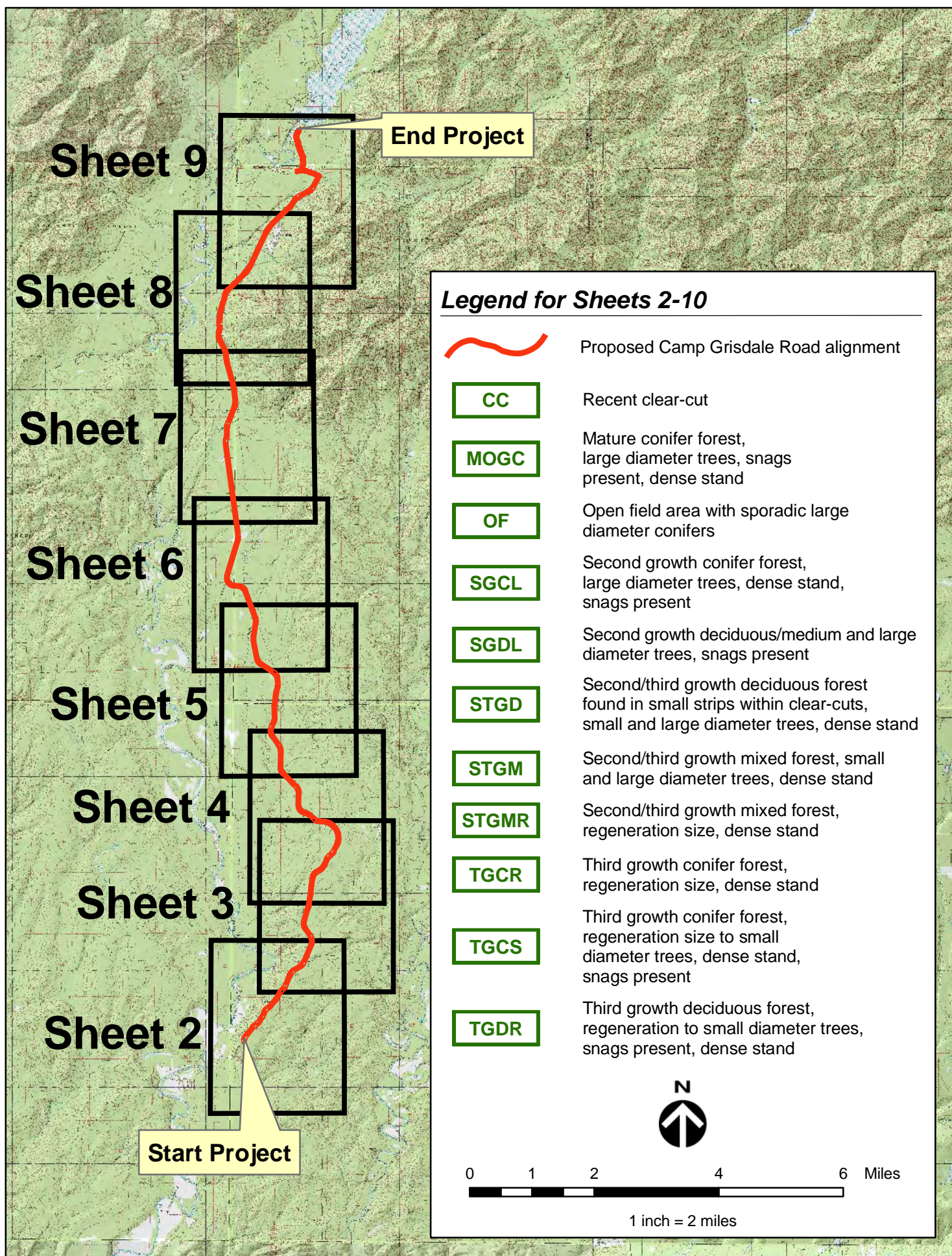


Figure 4-5, sheet 1 of 9. Key to wildlife habitat in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.

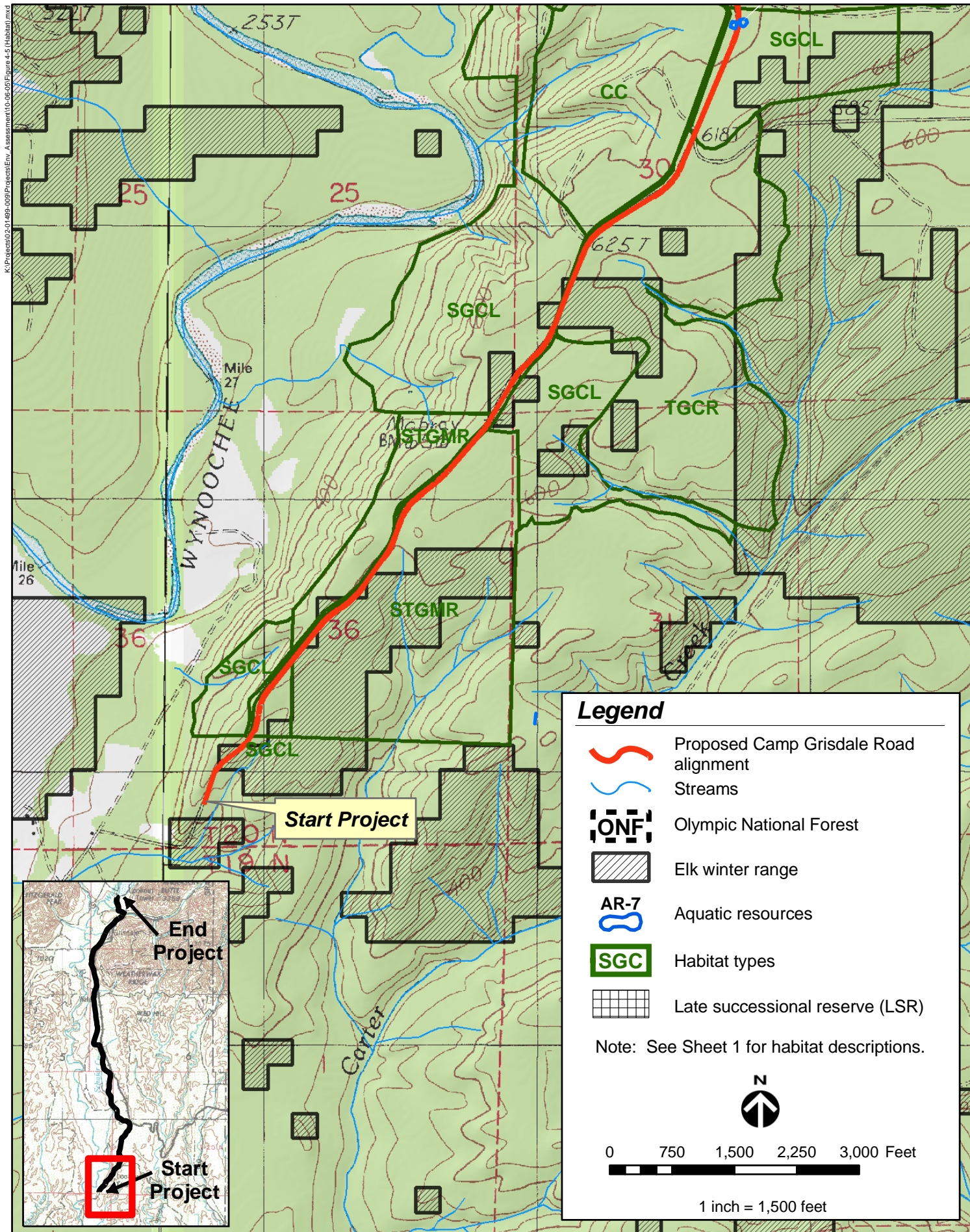


Figure 4-5, sheet 2 of 9. Wildlife habitat in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.

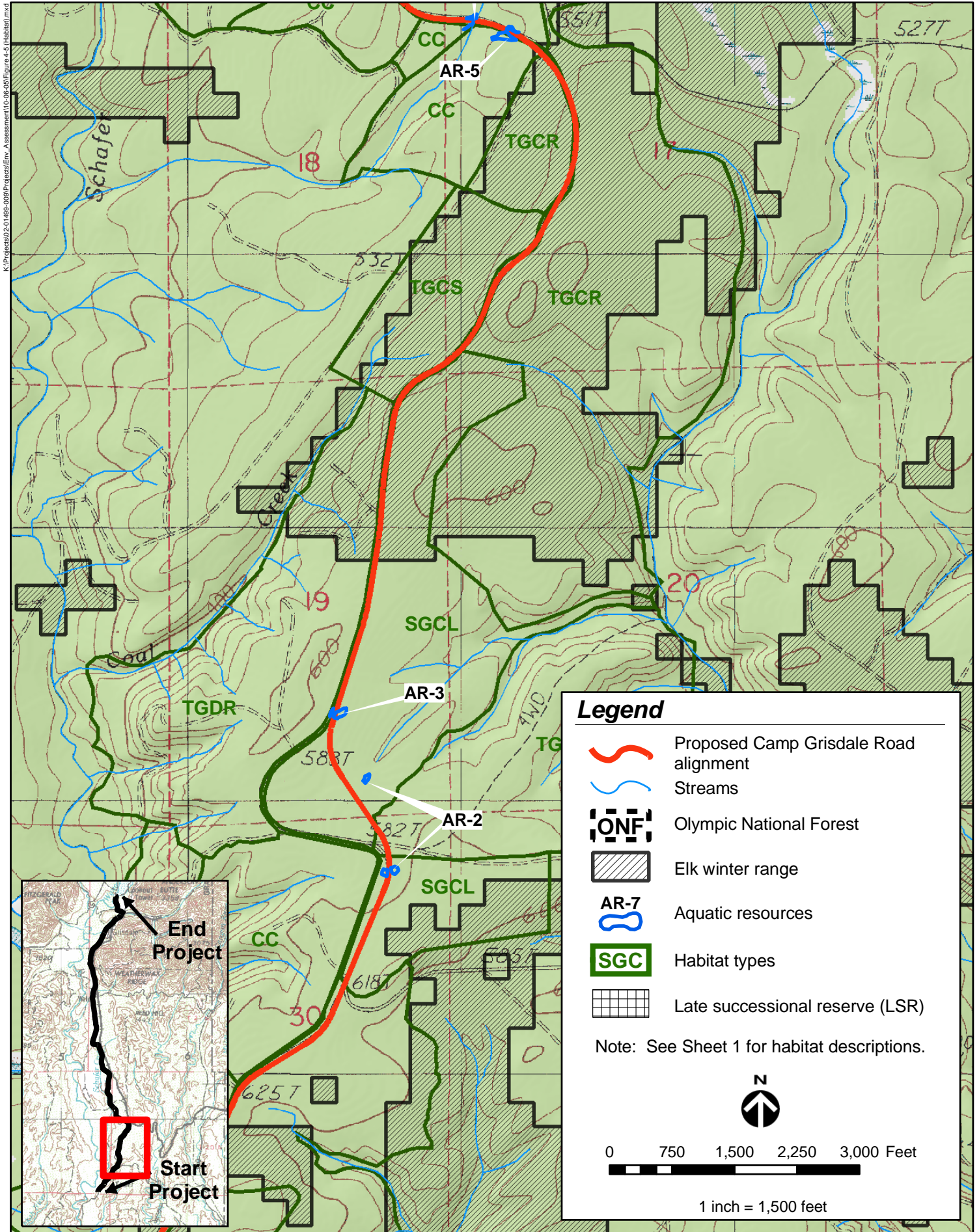


Figure 4-5, sheet 3 of 9. Wildlife habitat in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.

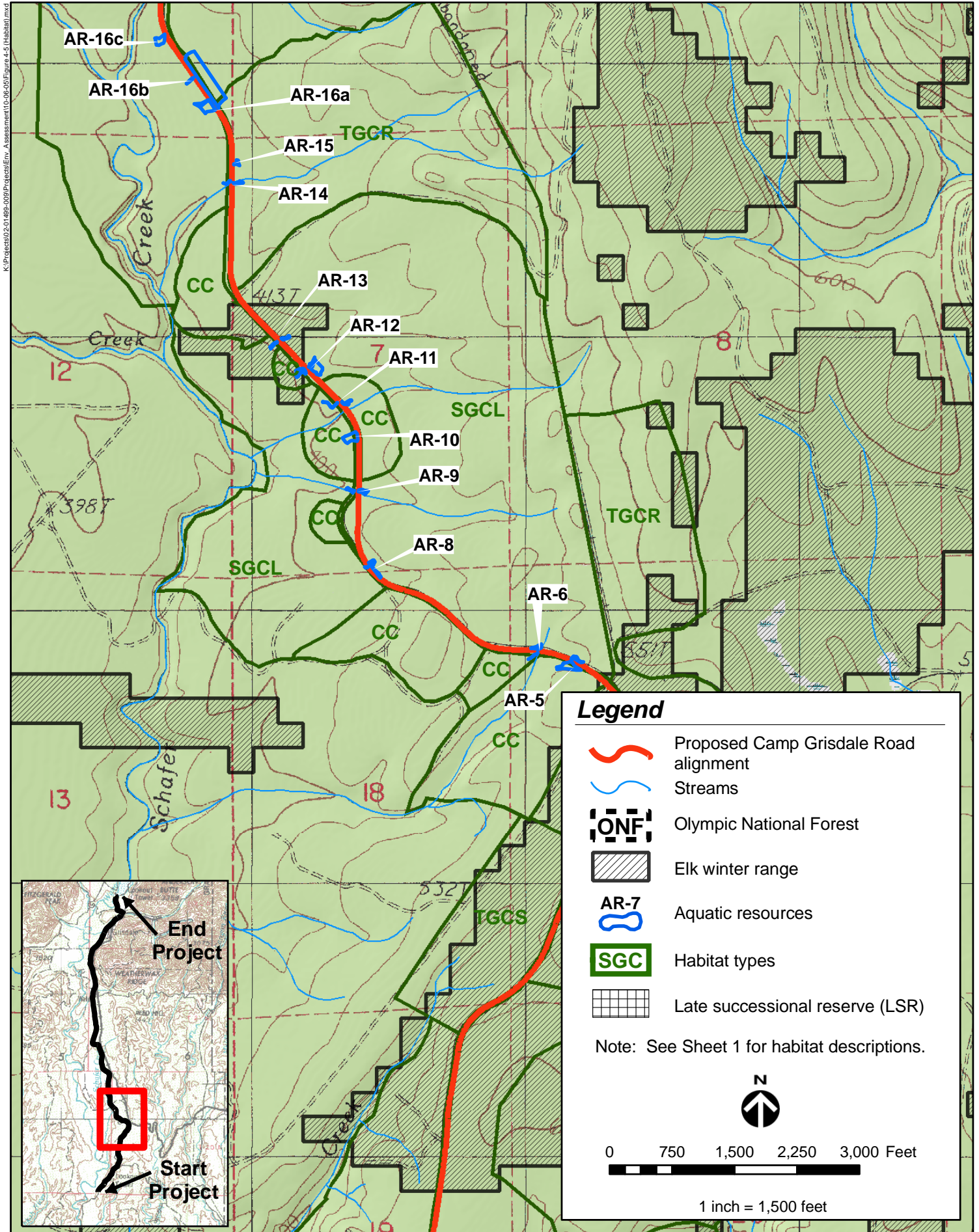
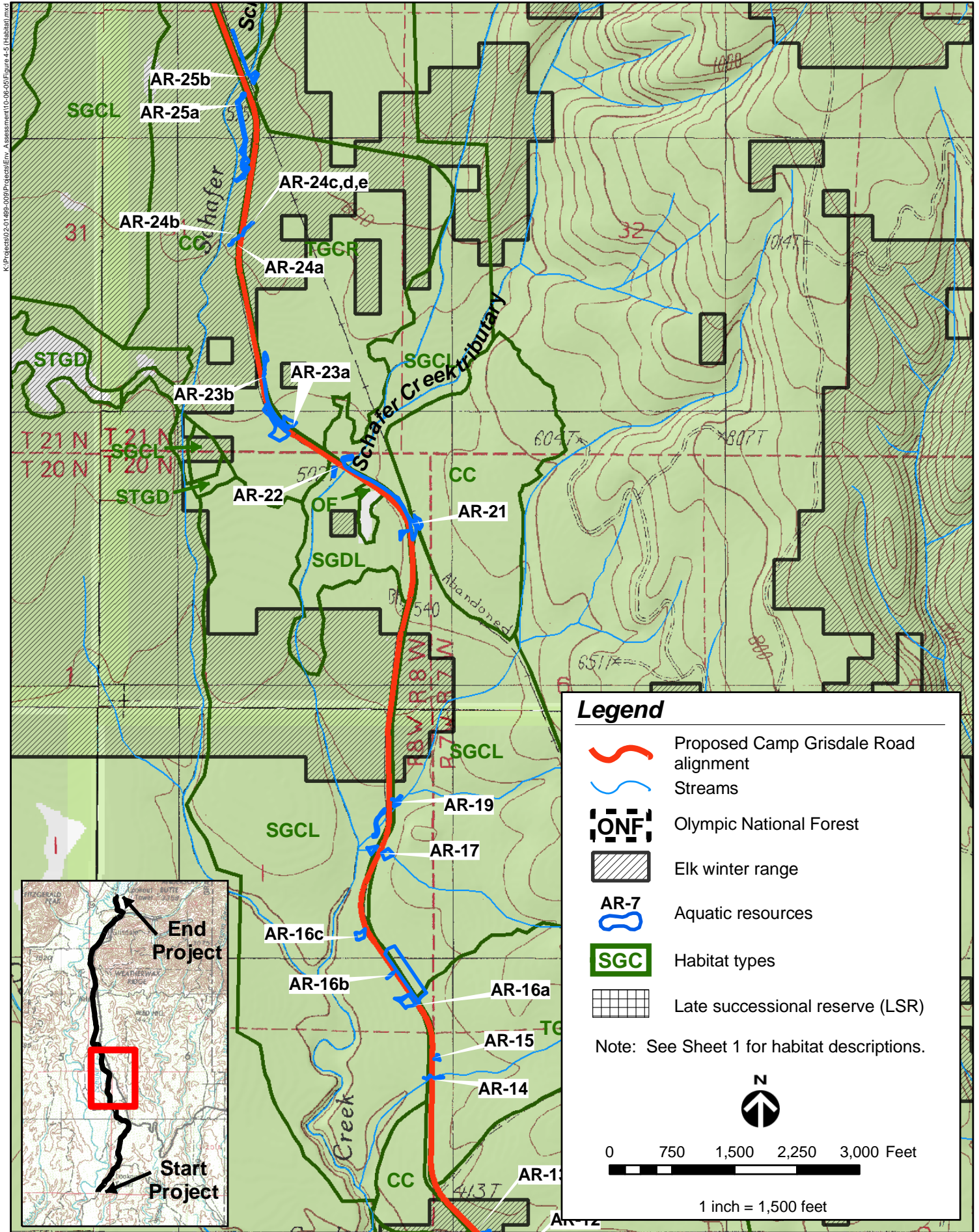


Figure 4-5, sheet 4 of 9. Wildlife habitat in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.



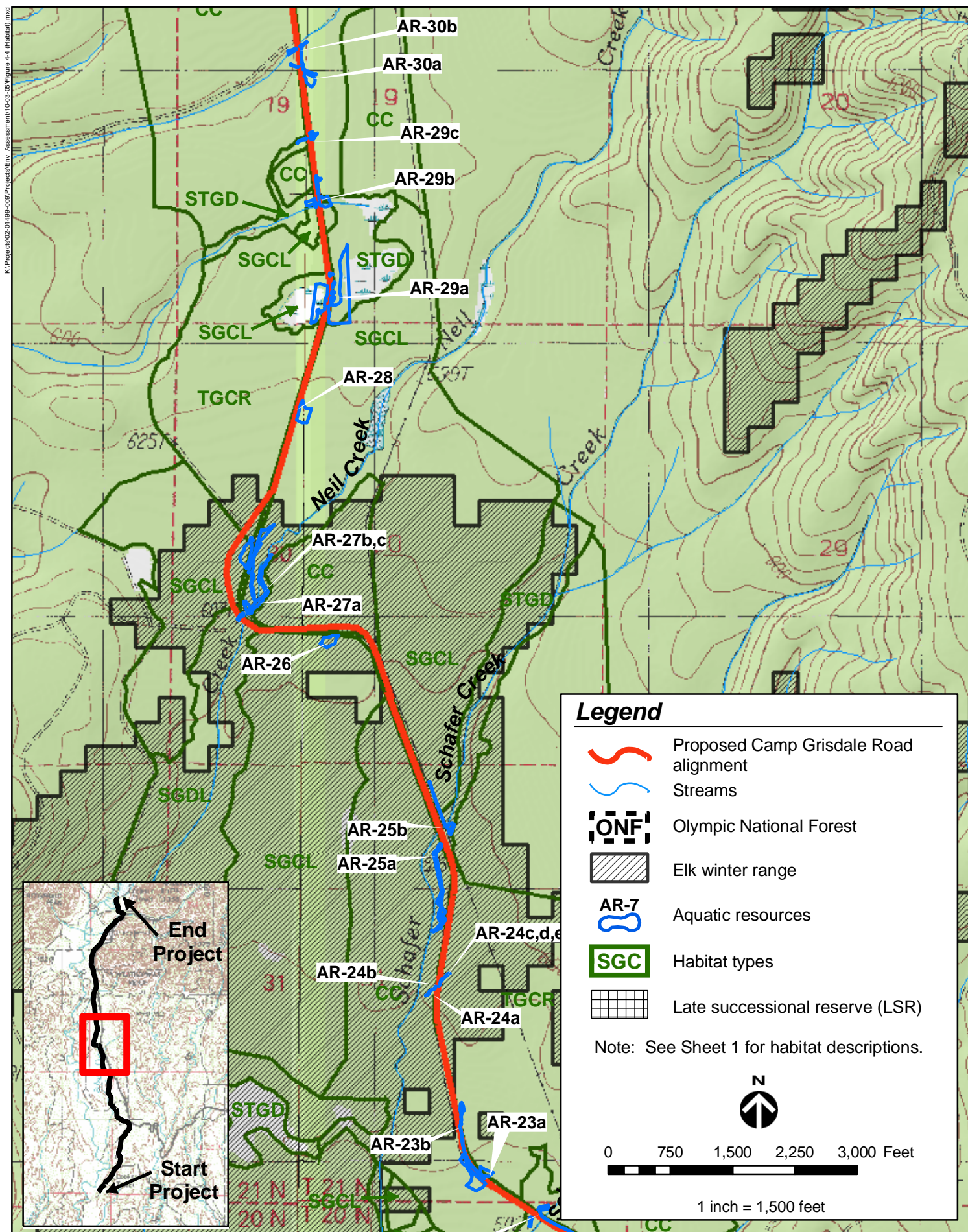


Figure 4-5, sheet 6 of 9. Wildlife habitat in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.

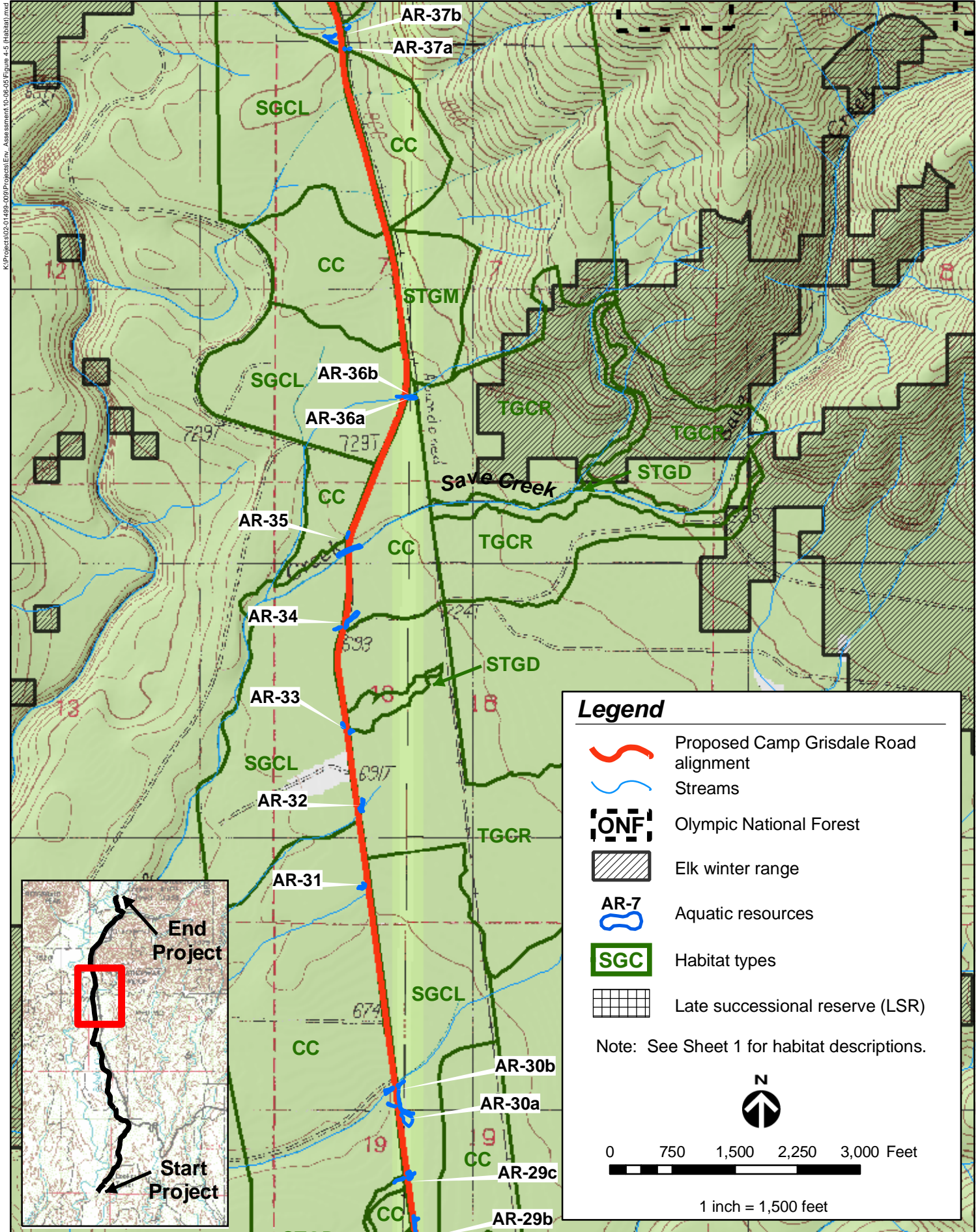


Figure 4-5, sheet 7 of 9. Wildlife habitat in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.

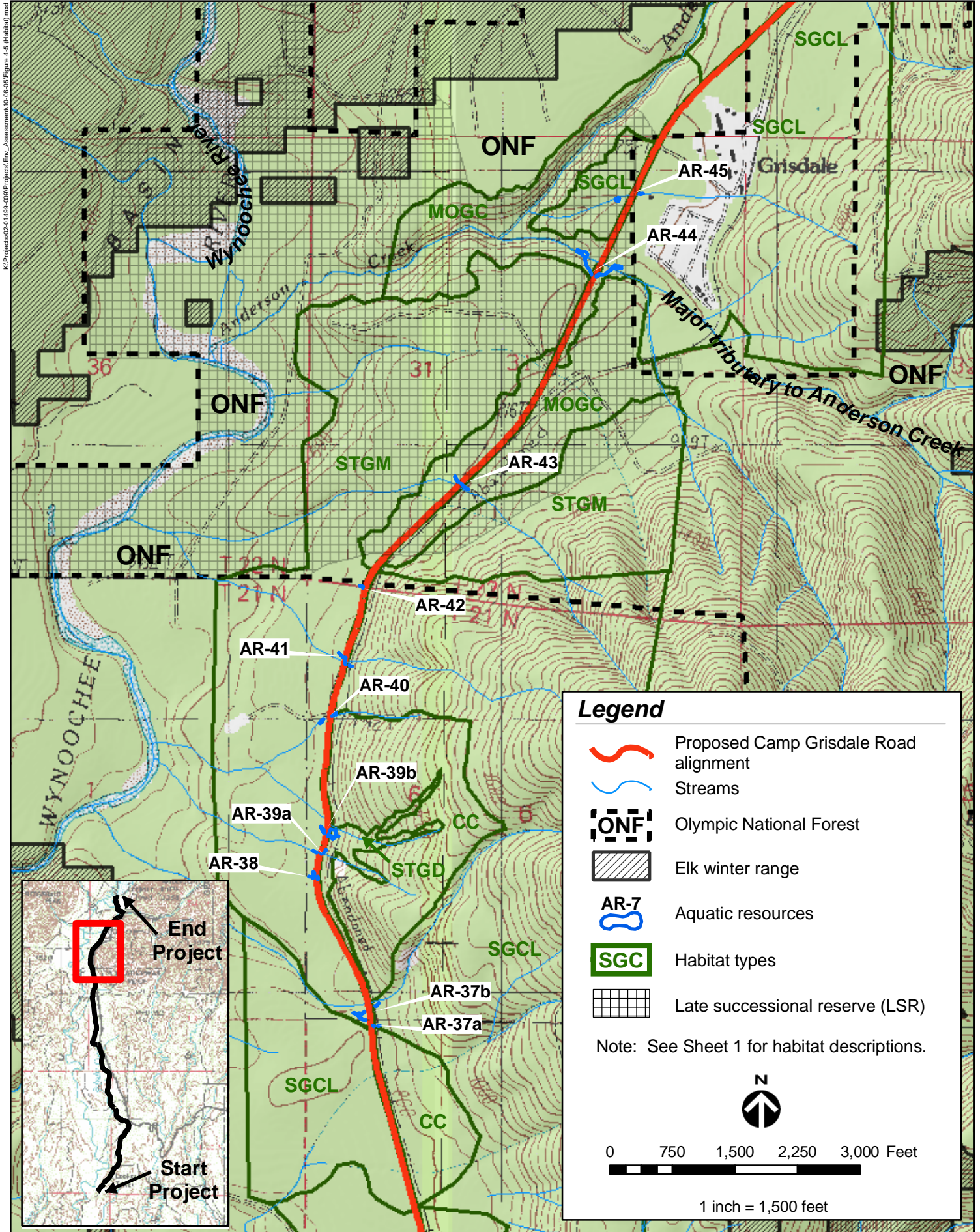


Figure 4-5, sheet 8 of 9. Wildlife habitat in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.

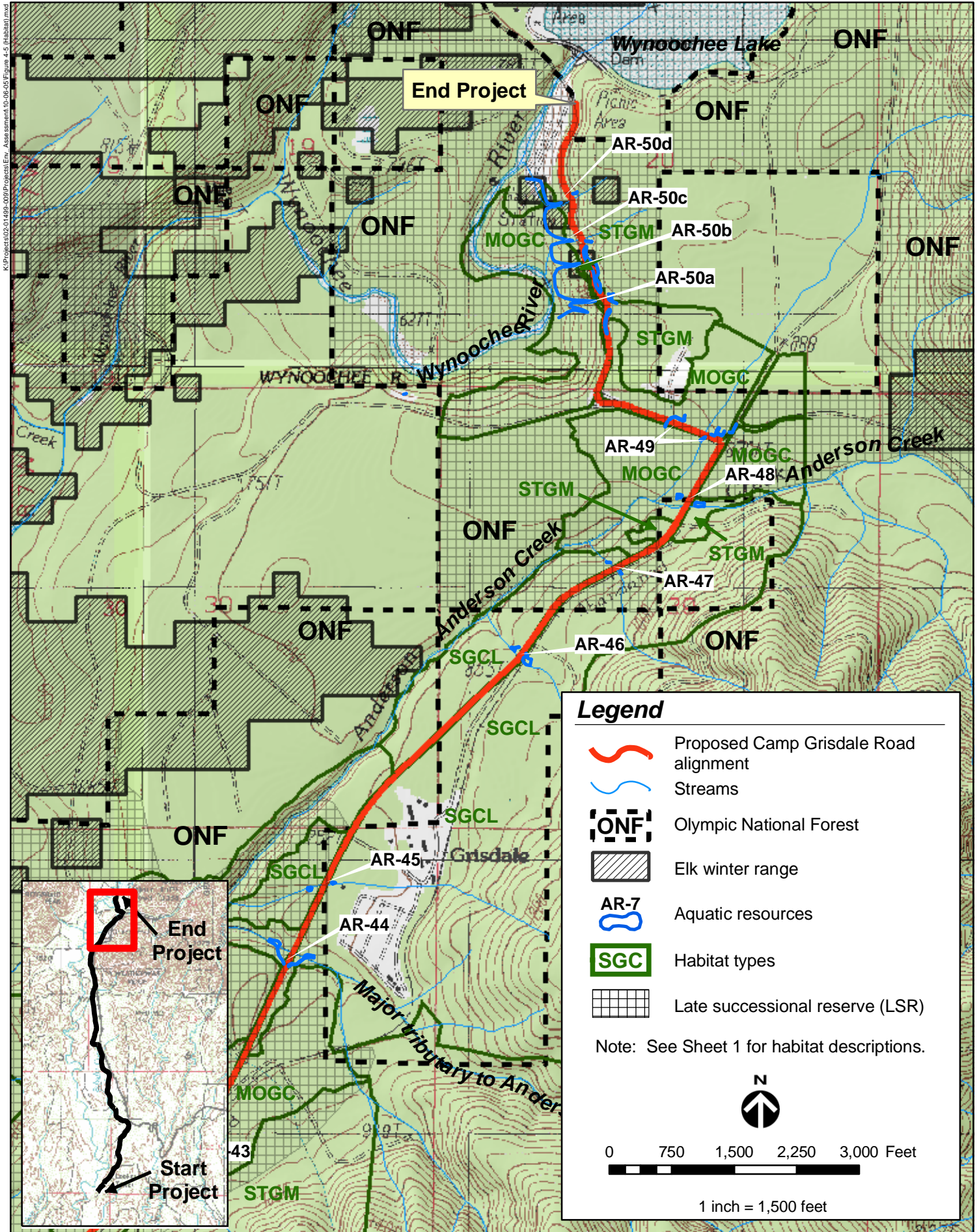


Figure 4-5, sheet 9 of 9. Wildlife habitat in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.

granulosa), western toad (*Bufo boreas*), and western red-backed salamander (*Plethodon vehiculum*).

Birds

Federally listed, Forest Service sensitive, and State sensitive bird species listed by USFWS (2004a), WDFW (2003, 2004a), and USDA Forest Service (2004c) include Aleutian Canada goose (*Branta canadensis leucopareia*), American peregrine falcon (*Falco peregrinus anatum*), bald eagle (*Haliaeetus leucocephalus*), common loon (*Gavia immer*), ferruginous hawk (*Buteo regalis*), marbled murrelet (*Brachyramphus marmoratus*), northern goshawk (*Accipiter gentilis*), northern spotted owl (*Strix occidentalis*), olive-sided flycatcher (*Contopus cooperi*), pileated woodpecker (*Dryocopus pileatus*), streaked horned lark (*Eremophila alpestris strigata*), and yellow-billed cuckoo (*Coccyzus americanus*). No habitat exists within the study area for the Aleutian Canada goose, American peregrine falcon, common loon, ferruginous hawk, streaked horned lark, or yellow-billed cuckoo. These species are not addressed further in this report.

Habitat for northern goshawk, olive-sided flycatcher, and pileated woodpecker exists within the project area. Northern goshawks and pileated woodpeckers use mature forested areas. Effects of the project on these species would be proportional to the clearing of mature forest in the project corridor. Olive-sided flycatchers use clearings adjacent to forested areas. The project is unlikely to affect the available habitat for olive-sided flycatchers.

Federally listed threatened and endangered bird species (i.e., bald eagle, marbled murrelet, and northern spotted owl) are discussed in the threatened and endangered species section.

The harlequin duck is no longer listed as a sensitive species. This status change was made during the study period for this project. Information on this species is provided for context. Occurrences of harlequin duck breeding pairs and breeding habitat were listed on the state Priority Habitats and Species maps (WDFW 2004a) for the area located along the Wynoochee River from the dam to 10 miles south. WDFW reported that surveys of the Wynoochee River completed in 1996 found nesting pairs on Wynoochee Lake and just below the dam where the river gradient is 3 to 5 percent (Shirago 2004). Harlequin ducks typically nest near logs and in vegetation within 2 to 3 feet of the shoreline. They also nest in cavities in snags and on rock ledges. They have very high breeding and wintering site fidelity because mating pairs separate after hatching and then rejoin each other at wintering sites in the Strait of Georgia in Alaska.

Other bird species of interest in the national forest are primary cavity excavators (i.e., downy and hairy woodpeckers and flickers) and neotropical migratory birds. Primary cavity excavators occur in a wide variety of forested habitats with sufficient snags and diseased trees to provide a food supply. Neotropical migratory birds use a wide variety of habitats in the project corridor. They were observed to occur in abundance in early-seral habitats dominated by shrubs and small trees, due to an abundance of food and nesting resources. They also occurred in second-growth and mature forests. A list of species observed and expected in the project corridor is included in Appendix E.

Mammals

Federally listed, Forest Service sensitive, and State sensitive mammal species identified by WDFW (2003, 2004a), USFWS (2004a), and Forest Service (2004a) include Columbia black-tailed deer (*Odocoileus hemionus*), fisher (*Martes pennanti*), long-eared myotis (*Myotis evotis*), long-legged myotis (*Myotis volans*), Olympic pocket gopher (*Thomomys mazama melanops*), pine marten (*Martes americana*), Townsend's big-eared bat (*Corynorhinus townsendii*), and western gray squirrel (*Sciurus griseus griseus*). No habitat for Olympic pocket gopher or western gray squirrel exists in the project corridor. These species are not addressed further.

Columbia black-tailed deer are common in the project corridor and use a wide variety of habitats throughout the year.

Forest bats, including long-eared myotis, long-legged myotis, and Townsend's big-eared bats, perch and roost during the day in crevasses in old-growth trees. They hibernate and maternity roost in caves, mine shafts, and old buildings. They also use bridges for cover and perching during foraging on moths over rivers and wetlands. No caves, old mines, or old buildings exist within the study area, so maternity roosting and hibernation do not occur in the area. However, these bats may use the new bridge at Save Creek (AR 35) for perching during foraging, and they likely roost in crevasses in trees in the mature forests along the project corridor.

Fishers are believed to have been extirpated from the Olympic Peninsula (Piper 2005) and therefore do not occur in the project corridor.

Pine martens use mature forest habitat. Because this habitat occurs in the project corridor, pine martens are assumed to use areas near the project corridor.

Terrestrial Mollusks

Surveys for terrestrial mollusks, including two snails and four slug species, were conducted in 2004 and 2005. Habitat requirements and potential habitat occurring within the study area are provided in Table 4-4. Generally, the two snail species (Puget Oregonian [*Cryptomastix devia*] and Hoko vertigo [*Vertigo n. sp.*]) are found within leaf litter or woody debris in old-growth or late successional forests. The Burrington's, Malone's, and warty jumping slugs (*Hemphillia burringtoni*, *H. malonei*, and *H. glandulosa*) typically inhabit woody debris in moist forests that have a hardwood component. The blue-gray taildropper slug (*Prophysaon coeruleum*) is found within leaf litter or organic debris in a more diverse set of habitats, from forests to open grassy areas, compared to the other terrestrial mollusks mentioned above.

Potential habitat for these snails and slugs exists within the old-growth, second-growth, and third-growth forest habitat units identified within the study area (Figure 4-5). Surveys were conducted only within the Olympic National Forest.

Forest Service sensitive warty jumping slugs were found in numerous locations within the project corridor in Olympic National Forest. They are presumed to be common in this area. No other listed or sensitive slug species were identified within the project corridor.

Insects

Ptential habitat for the federal species of concern/state candidate Makah's copper and the state sensitive Oregon silverspot occurs within the project corridor. Makah's copper (*Lycaena mariposa charlottensis*) requires forest openings and ericaceous plants (e.g., heathers, huckleberries, salal) for its life history. It is most commonly associated with bogs. Due to the lack of bogs, however, this insect is unlikely to occur in the project corridor.

The Oregon silverspot (*Speyeria zerene hippolyta*) uses a variety of habitats from conifer forest to sand dunes. It requires violets as larval food. Although conifer forests and violets occur in the project area, the closest known populations of Oregon silverspot occur in Oregon. Due to the distance from other populations, this insect is not likely to occur in the project corridor.

Fish and Fish Habitat

Analysis of Existing Information

The National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries), the U.S. Fish and Wildlife Service (USFWS), the Washington Department of Fish and Wildlife (WDFW), and the Forest Service were consulted about special status fish species presence within the streams that cross the project corridor or are in the vicinity (Figure 4-6 [total of seven sheets]). Table 4-5 lists the sensitive species identified as potentially occurring within the streams in the vicinity of the project. The federally listed species that potentially occurs in the project vicinity is the bull trout. The State sensitive species are the Olympic mudminnow and river lamprey. Forest Service sensitive species are the Salish sucker; chinook, chum, and coho salmon; and coastal cutthroat trout. Other fish species reported in the salmonid stock inventory (WDFW 1998) to potentially occur within the vicinity of the project corridor include steelhead trout (*Oncorynchus mykiss*), brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorynchus mykiss*), mountain whitefish (*Prosopium coulteri*), pygmy whitefish (*Prosopium coulteri*), shorthead sculpin (*Cottus confusus*), and sockeye salmon (*Oncorhynchus keta*).

After the June 2005 status review of salmonids and steelhead trout, coho salmon in the southwest Washington ESU were split from the Lower Columbia River ESU and their federal status was changed from candidate to undetermined. In 2006, coastal cutthroat trout was removed from the proposed threatened listing under the Endangered Species Act.

The locations of the streams are shown in Figure 4-1. The attributes of the stream aquatic resources are summarized in Table 4-6. A discussion of fish passage barriers and criteria for culvert replacement with fish-passable culverts is provided in the fish passage barrier section. Additional information about wetlands is provided in the wetland delineation report prepared for this project (Herrera 2005a).

The WDFW Priority Habitats and Species Program, NOAA Fisheries, and U.S. Fish and Wildlife Service (USFWS) were consulted for records of fish presence within the vicinity of the project corridor (WDFW 2003, 2004a, 2005; NOAA Fisheries 2003a, 2004, 2005; USFWS

2003a, 2007). Federally listed, Forest Service sensitive and State sensitive fish species potentially occurring in the project vicinity are presented in Table 4-5, along with aquatic habitats identified in the project corridor that may provide suitable conditions for these species. Most of the streams encountered within the project corridor flow toward the Wynoochee River or into major tributaries of the Wynoochee River, including Coal Creek, Schafer Creek, Neil Creek, and Anderson Creek. A discussion of federally listed fish species is provided in the threatened and endangered species section.

The WDFW and the Forest Service identified priority fish species (species considered conservation and management priorities) present in 13 of the drainages that cross the project corridor (ARs 19, 22, 25, 27, 29, 30, 35, 37, 39, 40, 44, 46, and 48), including priority anadromous and resident fishes (Figure 4-6, Table 4-5). Streams within the vicinity of the project corridor that also contain priority fish include: Wynoochee River and Coal Creek. It is assumed that resident fishes such as cutthroat trout (*Oncorhynchus clarki*) may be present in all of the streams identified in the project corridor, and that some anadromous fishes not documented by WDFW or the Forest Service may occur in some of the identified streams.

Field Investigation Results

Of the 45 aquatic resources, 36 were observed to have one or more surface water channels flowing through them. Several surface water channels were split into two or three tributaries; therefore, 46 stream channels cross the project corridor within 45 aquatic resources (ARs 5, 6, 8, 9, 11 through 14, 16, 17, 19, 21, 22, 23, 24, 25, 27, 29, 30, 31, 34, 35 through 37, 39 through 41, and 43 through 50) (Table 4-6). The identified streams range in size from small channels (1 to 3 feet wetted width) to major tributaries of the Wynoochee River such as Schafer Creek and Anderson Creek, which range from 10 to 25 feet in wetted width. Twenty-five of the 46 streams (more than 50 percent) have perennial flow.

A quantitative and qualitative assessment of stream habitat character was performed within the project corridor and study area, identifying general aquatic habitat types, dominant substrate, and the presence of large woody debris. The qualitative stream data are presented in Table 4-6. Quantitative stream data forms are presented in the biological resources report (Herrera 2005b).

The majority of the streams were observed to have low-gradient or high-gradient riffles and alternating pool habitat within the project corridor. Twenty-one of the 46 streams had spawning, rearing or both types of habitat for fish both upstream and downstream of the culvert crossing under Camp Grisdale Road. An additional eight streams had spawning and/or rearing habitat for fish only downstream of their crossing of Camp Grisdale Road. The majority of streams (64 percent) have good fish habitat.

The stream resources between the start of the project corridor and AR 37 (at milepost 13.0) consist of a series of low-gradient riffles and pools or glides. Streams that are north of AR 36 flow down steeper slopes, particularly on the downstream (west) side of the project corridor. These streams generally contain steeper riffle habitat than those to the south, including

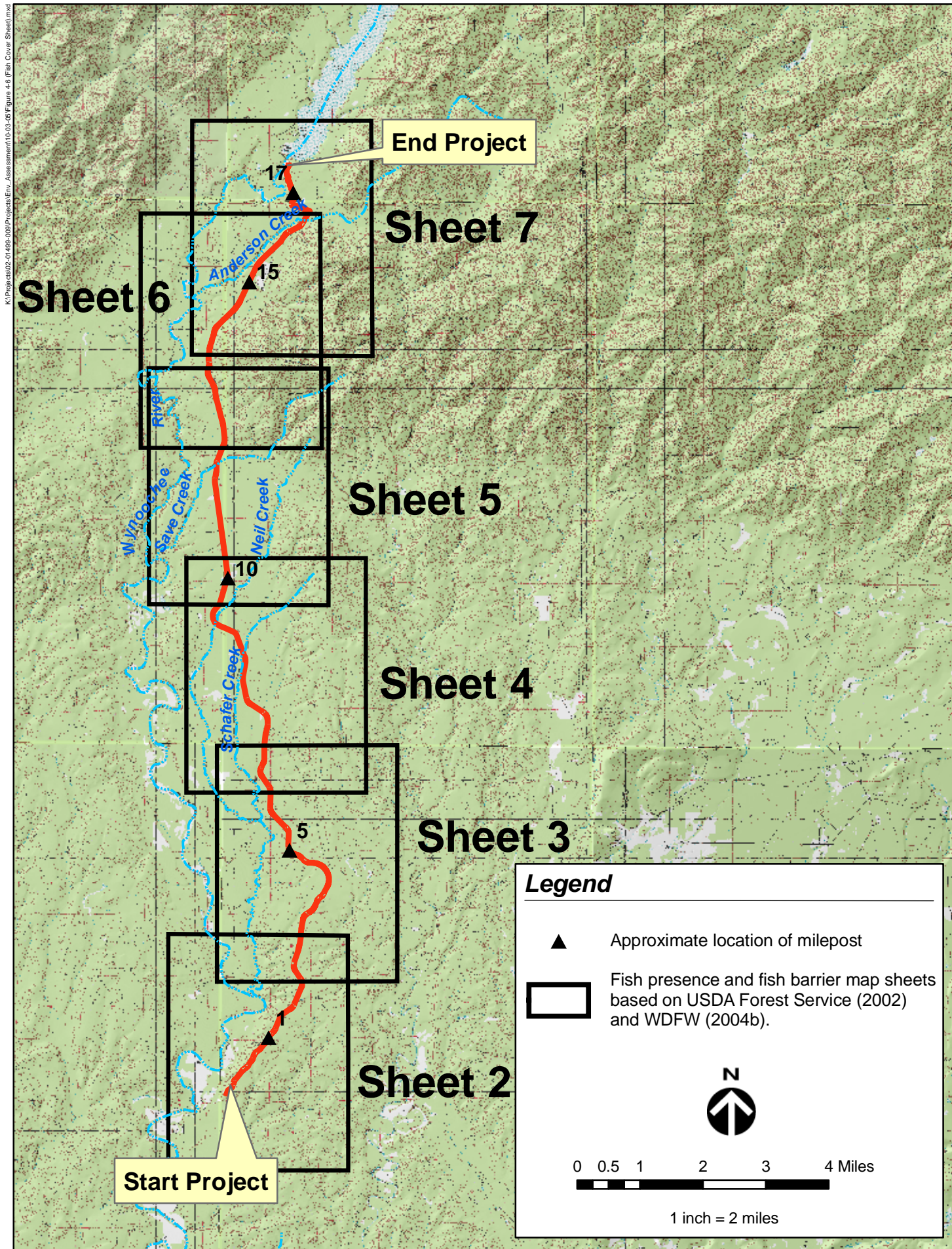


Figure 4-6, sheet 1 of 7. Key to fish presence and fish barriers in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.

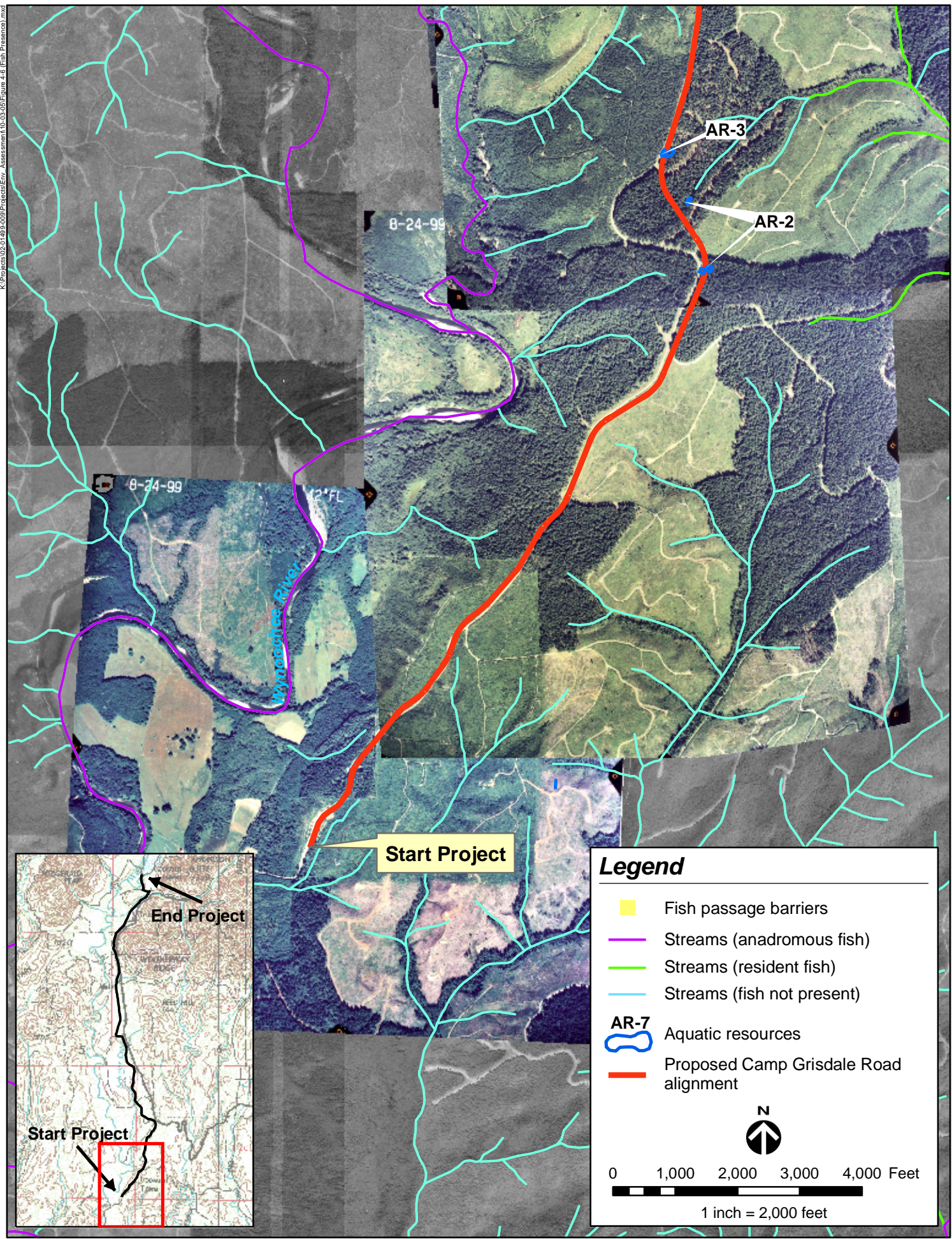
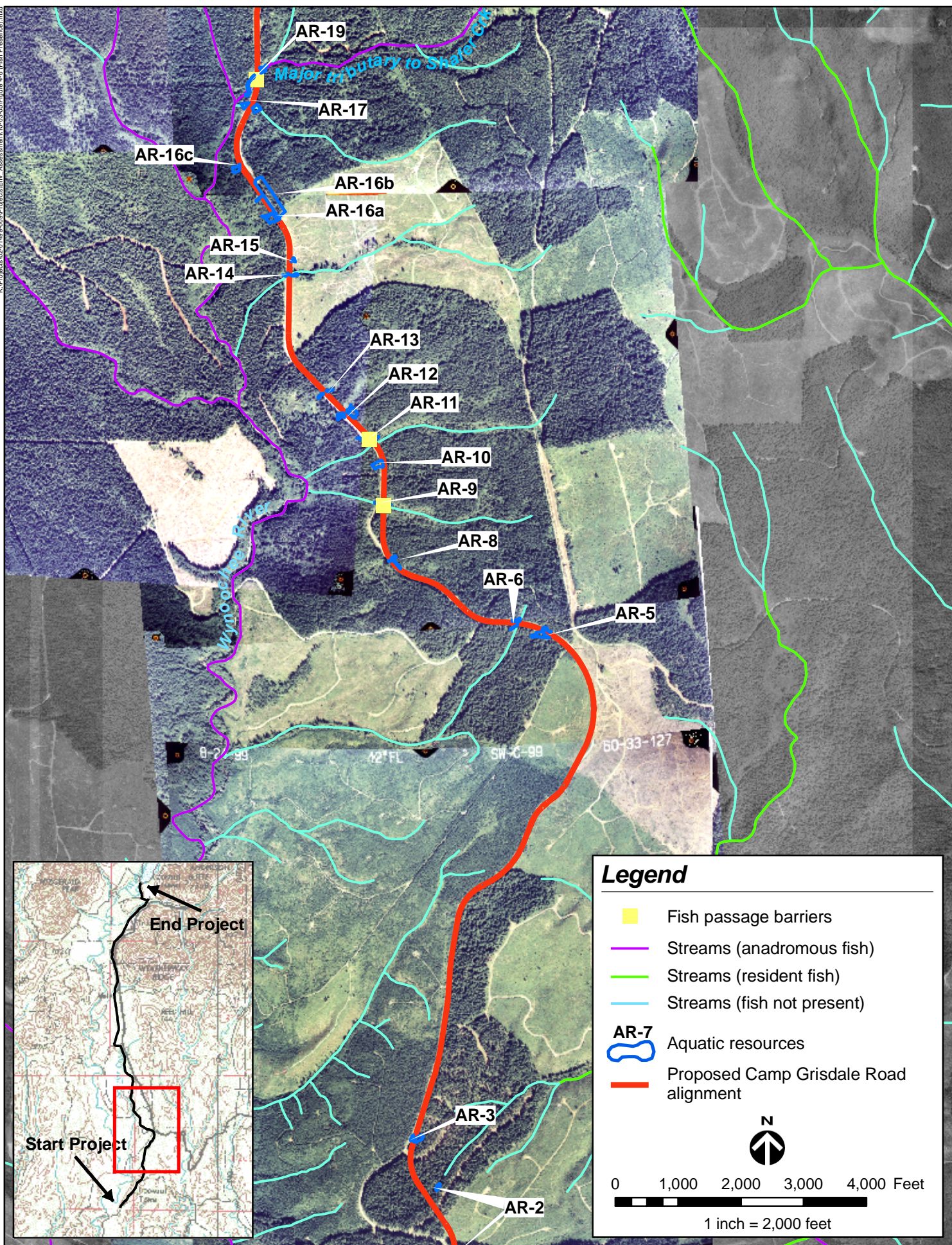


Figure 4-6, sheet 2 of 7. Fish presence and fish barriers in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.

K:\Projects\02-01-489-039\Project\Env. Assessment\10-03-05\Figure 4-6 (Fish Presence).mxd



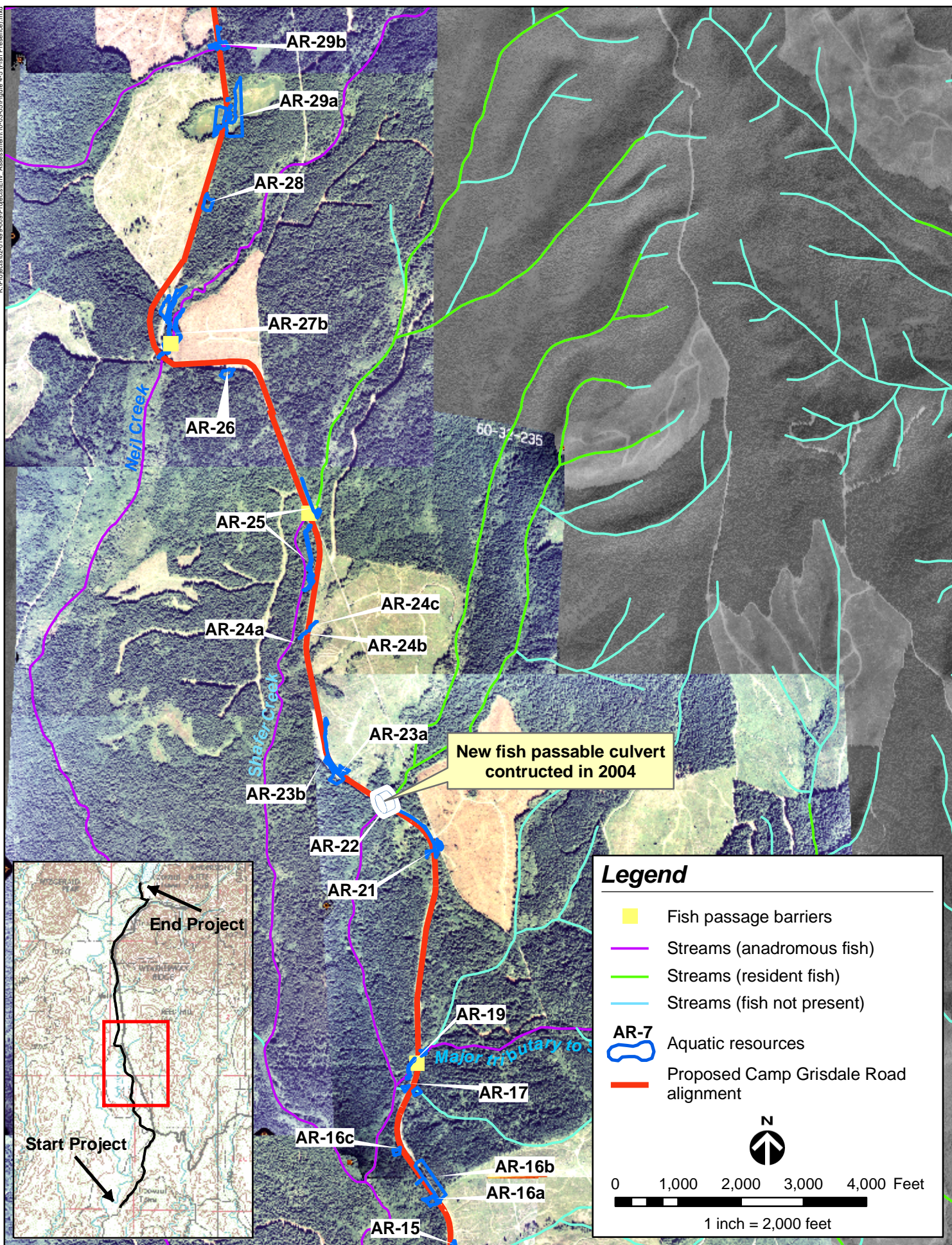


Figure 4-6, sheet 4 of 7. Fish presence and fish barriers in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.

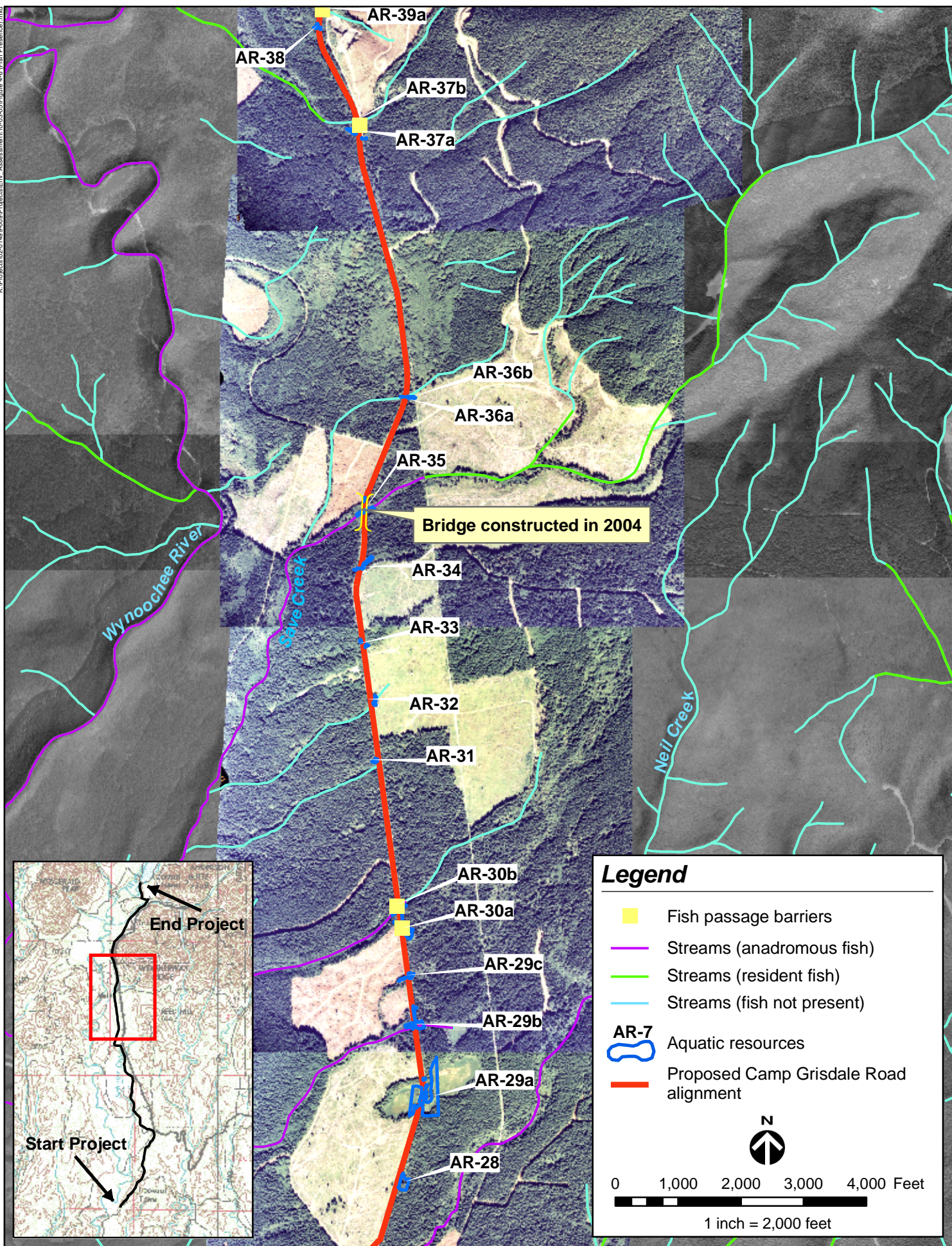


Figure 4-6, sheet 5 of 7. Fish presence and fish barriers in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.

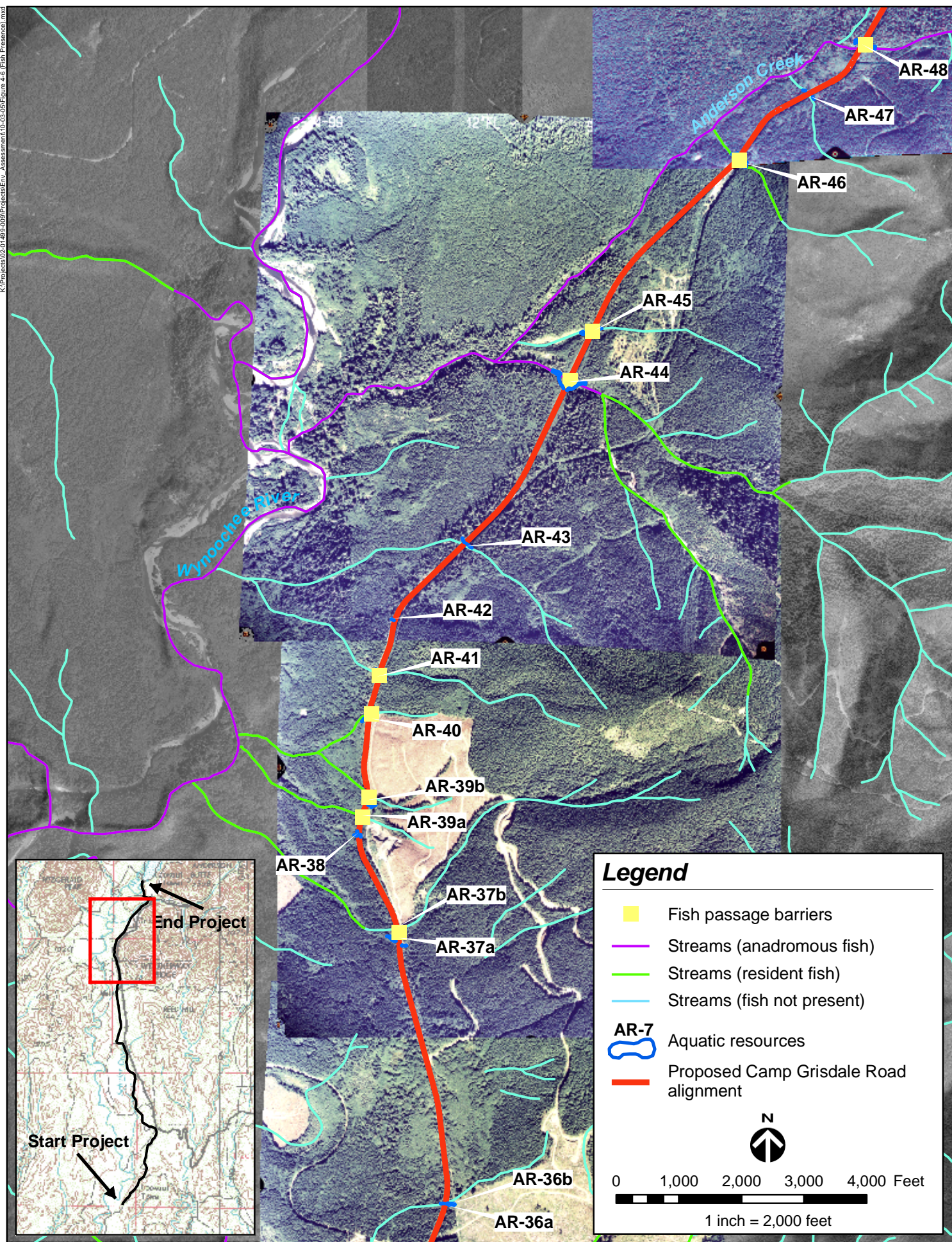


Figure 4-6, sheet 6 of 7. Fish presence and fish barriers in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.

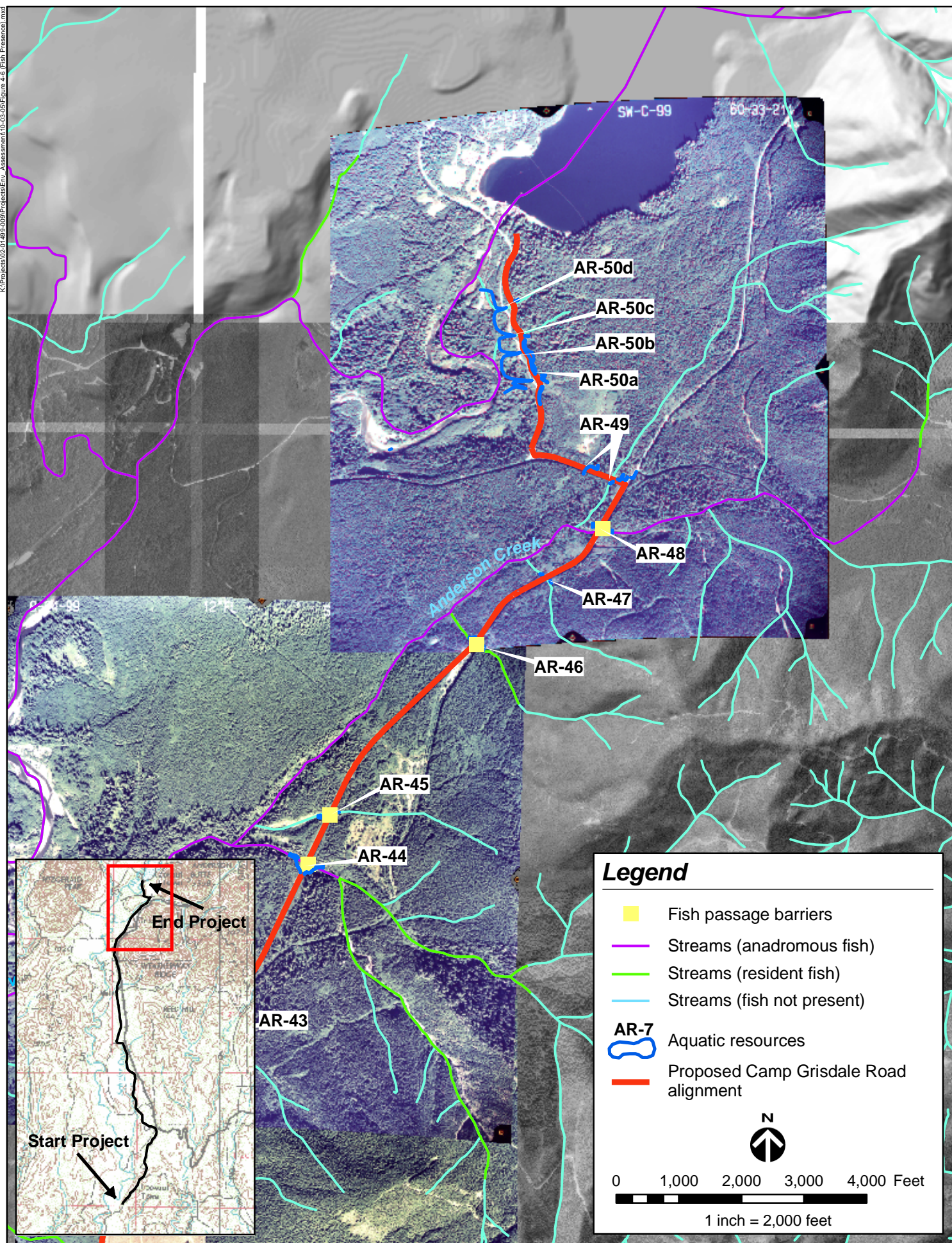


Figure 4-6, sheet 7 of 7. Fish presence and fish barriers in the vicinity of the Camp Grisdale Road project, Grays Harbor County, Washington.

Table 4-5. Listed and sensitive fish species potentially occurring in the vicinity of the Camp Grisdale Road project.

Common Name	Scientific Name	Agency Status ^a				Preferred Habitat Type	Suitable Habitat in Study Area? ^b (if yes, unit is listed)
		NOAA Fisheries	USFWS	WDFW	Forest Service		
Olympic mudminnow	<i>Novumbra hubbsi</i>	–	–	Sensitive	D	Lotic, pond, and marsh habitat in coastal lowlands	No
Salish sucker	<i>Catostomus</i> sp.	–	–	–	S	Upper reaches of small, slow-moving streams that are clean and cold	ARs 9, 14, 19, 22, 25, 27, 35, 36, 37, 41, 43, 44, 46, 48, 49
River lamprey	<i>Lampetra ayresi</i>	–	SOC	Candidate	–	Low-gradient streams with sand and gravel substrate for anadromous spawning	ARs 9, 14, 19, 22, 25, 27, 35, 36, 37, 41, 43, 44, 46, 48, 49
Pacific lamprey	<i>Lampetra tridentata</i>	–	SOC	–	–	Low-gradient streams with sand and gravel substrate for anadromous spawning	ARs 9, 14, 19, 22, 25, 27, 35, 36, 37, 41, 43, 44, 46, 48, 49
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	–	–	–	D	Large rivers and streams for anadromous spawning, due to large body size and relatively poor leaping ability	ARs 25, 27, 35, 44, 48
Chum salmon	<i>Oncorhynchus keta</i>	–	–	–	D	Anadromous spawning closer to saltwater than other salmon species (prefers shallower, slow-running streams than other salmonids)	ARs 25, 27, 35, 44, 48
Coho salmon	<i>Oncorhynchus kisutch</i>	dropped from candidate status	–	–	D	Anadromous species spawns in clean freshwater rivers	ARs 19, 22, 25, 27, 29, 30, 35, 37, 39, 40, 44, 46, 48
Coastal cutthroat trout	<i>Oncorhynchus clarki clarki</i>	–	Dropped from proposed T status	–	D	Gravelly coastal streams and estuaries	ARs 19, 22, 25, 27, 29, 30, 35, 37, 39, 40, 44, 46, 48
Bull trout	<i>Salvelinus confluentus</i>	–	T	SOC	–	Spawning habitat restricted to clear, cold, pristine streams	ARs 19, 25, 27, 35, 44, 48

^a Agency status: E = endangered, T= threatened, SOC= species of concern, D = documented presence, S = suspected presence, SM= state monitor species.

^b See Table 4-2.

Sources: Eder (2002), Leonard et al. (1993), USFWS (1986, 1997, 2003a, 2007), WDFW (1991, 2003), NOAA Fisheries (2004, 2007).

Table 4-6. Stream and fish habitat observed in the Camp Grisdale Road study area and project corridor.

Habitat Unit	Stream Name or Identification	Approximate Mileage from Start of Project Corridor	Stream Flow Type	Presence of Priority Anadromous or Resident Fish ^a	Upstream Habitat Description ^b	Upstream Substrate Type	Downstream Habitat Description	Downstream Substrate Type	Hydrologic Condition
AR 5	Tributary of Schafer Creek (AR 6)	4.4	Intermittent/wetland drainage	None documented	No defined channel flowing through wetland	Organic	Low-gradient riffle and pool complexes	Organic/gravel	Wetland becomes a stream channel downstream of road.
AR 6	Tributary of Schafer Creek (AR 25)	4.4	Perennial	None documented	Low-gradient riffle and pool complexes	Sand/silt; gravels farther upstream	Low-gradient riffle and pool complexes	Gravel/sand	Stream with associated wetland.
AR 8	Tributary of Schafer Creek (AR 25)	4.9	Intermittent	None documented	Low-gradient riffle and pool complexes	Gravel/sand	Low-gradient riffle and pool complexes	Gravel/sand	Channelized flow with associated wetland downstream of road.
AR 9	Tributary of Schafer Creek (AR 25)	5.1	Perennial	None documented	Low-gradient riffle and pool complexes	Sand/silt	Low-gradient riffle and pool complexes	Gravel/sand	Stream with associated wetland.
AR 11	Tributary of Schafer Creek (AR 25)	5.4	Perennial	None documented	Low-gradient riffle and pool complexes	Gravel/sand	Low-gradient riffle and pool complexes	Gravel/sand	Stream associated with wetland.
AR 12	Tributary of Schafer Creek (AR 25)	5.5	Perennial	None documented	Low-gradient riffle and glide	Sand/gravel	Pool at culvert outlet, then low-gradient riffle and glide	Sand/silt	Stream associated with wetland.
AR 13	Tributary of Schafer Creek (AR 25)	5.6	Perennial	None documented	Backwater pool at culvert, then low-gradient riffle	Silt/sand	Low-gradient riffle and glide	Sand/gravel	Stream associated with wetland.
AR 14	Tributary of Schafer Creek (AR 25)	5.9	Perennial	None documented	Low-gradient riffle and pool complexes with some glide features	Sand/gravel	Low-gradient riffle and pool complexes	Sand	Stream flows through clear-cut on east side of road.
AR 16a	Tributary of Schafer Creek (AR 25)	6.1	Perennial	None documented	Low-gradient riffle and glide; poorly defined channel	Silt/sand	Low-gradient riffle and glide; poorly defined channel	Silt/sand	Wetlands with two streams flowing through it.
AR 16b	Tributary of Schafer Creek (AR 25)	6.2	Perennial	None documented	Low-gradient riffle and glide; poorly defined channel	Silt/sand	Undefined wetland channel	Sand/cobble	Wetlands with two streams flowing through it.
AR 16c	Tributary of Schafer Creek (AR 25)	6.2	Intermittent	None documented	Low-gradient riffle and glide; poorly defined channel	Silt/sand	Backwater pool at culvert, then low-gradient riffle and pool complexes	Sand/cobble	Wetland drainage and springs.

Table 4-6 (continued). Stream and fish habitat observed in the Camp Grisdale Road study area and project corridor.

Habitat Unit	Stream Name or Identification	Approximate Mileage from Start of Project Corridor	Stream Flow Type	Presence of Priority Anadromous or Resident Fish ^a	Upstream Habitat Description ^b	Upstream Substrate Type	Downstream Habitat Description	Downstream Substrate Type	Hydrologic Condition
AR 17	Tributary of AR 22 (major tributary of Schafer Creek)	6.5	Intermittent	None documented	No defined channel; wetland conditions	Organic	Low-gradient riffle	Small gravel	Tributary flows approximately 150 feet to Schafer Creek tributary (AR 22).
AR 19	Tributary of AR 22 (major tributary of Schafer Creek)	6.6	Perennial	Anadromous and resident, partial fish blockage at culvert	Low gradient riffle and pool complexes; large woody debris (LWD) present	Small gravel/ cobble	Plunge pool at culvert, then low-gradient riffle and pool complexes	Small gravel/ cobble	Tributary of Schafer Creek tributary (AR 22).
AR 21	Tributary of AR 22 (major tributary of Schafer Creek)	7.3	Perennial/ wetland drainage	None documented, fish blockage at culvert	No defined channel; wetland conditions	Organic	Low-gradient riffle flowing into braided channels in wetland	Sand/small gravel	Wetland becomes a stream channel on downstream side of road.
AR 22	Major tributary of Schafer Creek (AR 25)	7.5	Perennial	Anadromous downstream of culvert, resident upstream of culvert	Low-gradient riffle and pool complexes; LWD present	Small gravel/ cobble	Plunge pool at culvert, then low-gradient riffle and pool complexes	Small gravel/ cobble	Schafer Creek tributary.
AR 23a	Tributary of Schafer Creek (AR 25)	7.7	Intermittent/ wetland drainage	None documented	Low-gradient riffle and pool complexes	Sand/small gravel	No defined channel; wetland conditions	Organic	Flow within a poorly defined channel.
AR 23b	Tributary to Schafer Creek (AR 25)	7.7	Intermittent/ wetland drainage	None documented	Low-gradient riffle and pool complexes	Sand/small gravel	No defined channel; wetland conditions	Organic	Flow within a poorly defined channel.
AR 24a & b	Tributary of Schafer Creek (AR 25)	8.0	Intermittent/ wetland drainage	None documented	No defined channel; wetland conditions	Organic	Low-gradient riffle and glide; small woody debris present	Sand/small gravel	Flow within a poorly defined channel.
AR 24c	Tributary of Schafer Creek (AR 25)	8.1	Intermittent	None documented	Low-gradient riffle and pool complexes	Small gravel	Low-gradient riffle and glide; small woody debris present	Sand/small gravel	Flow within a poorly defined channel.
AR 25	Schafer Creek	8.4	Perennial	Anadromous fish immediately upstream of culvert; resident upstream	Low-gradient riffle, plunge pool, low-gradient riffle; LWD present	Cobble/gravel	Plunge pool, then low-gradient riffle	Small gravel/ sand	Riparian corridor of Schafer Creek.

Table 4-6 (continued). Stream and fish habitat observed in the Camp Grisdale Road study area and project corridor.

Habitat Unit	Stream Name or Identification	Approximate Mileage from Start of Project Corridor	Stream Flow Type	Presence of Priority Anadromous or Resident Fish ^a	Upstream Habitat Description ^b	Upstream Substrate Type	Downstream Habitat Description	Downstream Substrate Type	Hydrologic Condition
AR 27b	Neil Creek (tributary of Schafer Creek [AR 25])	9.2	Perennial	Resident and anadromous	Dam pool, low-gradient riffle, lateral scour pool, low-gradient riffle; LWD present	Sand/gravel	Plunge pool at culvert, then glide, low-gradient riffle, and pool complexes	Small gravel/cobble	Riparian corridor of Neil Creek.
AR 29 a, b, & c	Tributary of Wynoochee River	9.9	Perennial/wetland drainage	Anadromous	Wetland rearing habitat	Sand/organic	Wetland rearing habitat; potential spawning habitat approximately 0.25 miles downstream of project corridor	Sand/organic to sand/gravel	Headwater wetland provides perennial flow to stream within wetland and flows downstream.
AR 30a	Tributary of Wynoochee River	10.5	Intermittent	Anadromous fish downstream, none documented above (no habitat exists above)	Low-gradient riffle and pools; wetland is off-channel pool	Organic/gravel	Plunge pool at culvert, then glide, low-gradient riffle, and pool complexes; LWD present	Small gravel/cobble	Open water wetland just south of the stream adds hydrology to the stream downstream of the road.
AR 30b	Tributary of Wynoochee River	10.5	Intermittent	Anadromous fish downstream, none documented above	Low-gradient riffle and pools	Gravel/sand	Low-gradient riffle and pool complexes	Gravel/sand	Unnamed stream.
AR 31	Tributary of Save Creek (AR 35)	10.8	Intermittent	None documented	Low-gradient riffle and pools	Gravel/sand	Low-gradient riffle and pool complexes	Gravel/sand	Contributes water to downgradient streams.
AR 34	Tributary of Save Creek (AR 35)	11.6	Perennial/wetland drainage	None documented	Low-gradient riffle	Sand/mud	Low-gradient riffle	Sand/mud	Flows through wetland.
AR 35	Save Creek	11.8	Perennial	Anadromous upstream and downstream (after bridge constructed in 2003)	Low-gradient riffle, lateral scour pool, then low-gradient riffle and pool complexes	Cobble/small gravel	Plunge pool, then low-gradient riffle and pool complexes	Cobble/small gravel	Riparian corridor of Save Creek.
AR 36a	Tributary of Save Creek (AR 35)	12.2	Perennial	None documented	Low-gradient riffle and glide	Silt/sand	Low-gradient riffle and glide	Silt/sand	Upstream channel is poorly defined, braided wetland flow. Downstream channel meanders through recent timber harvest area.

Table 4-6 (continued). Stream and fish habitat observed in the Camp Grisdale Road study area and project corridor.

Habitat Unit	Stream Name or Identification	Approximate Mileage from Start of Project Corridor	Stream Flow Type	Presence of Priority Anadromous or Resident Fish ^a	Upstream Habitat Description ^b	Upstream Substrate Type	Downstream Habitat Description	Downstream Substrate Type	Hydrologic Condition
AR 36b	Tributary of Save Creek (AR 35)	12.2	Intermittent	None documented	Low-gradient riffle and glide	Silt/sand	Plunge pool, then low-gradient riffle and pool complexes, then low-gradient riffle and pool complexes	Sand/gravel	Stream flows through wetland.
AR 37a	Tributary of Wynoochee River	13.0	Perennial	Resident downstream, none documented upstream	Low-gradient riffle, lateral scour pool, then low-gradient riffle and pool complexes; LWD present	Cobble/small gravel	Plunge pool, then low-gradient riffle and pool complexes; LWD present	Cobble/small gravel	Southern tributary flow through the wetland. These join approximately 75 feet downstream of the road.
AR 37b	Tributary of Wynoochee River	13.0	Perennial	Resident downstream, none documented upstream	High-gradient riffle with small pools; LWD present	Cobble/boulder	High-gradient riffle, then low-gradient riffle and pool complexes	Cobble/boulder	Northern tributary flow through the wetland. These join approximately 75 feet downstream of the road.
AR 39a	Tributary of AR 39b (tributary of Wynoochee River)	13.4	Perennial	Resident downstream, none documented upstream	High-gradient riffle, culvert, high-gradient riffle	Cobble/gravel	Plunge pool, then high-gradient riffle	Cobble/boulder	Southern tributary flows through the wetland. AR 39a joins AR 39b approximately 100 feet downstream of the road.
AR 39b	Tributary of Wynoochee River	13.4	Perennial	Resident downstream, none documented upstream	High-gradient riffle, culvert, high-gradient riffle	Cobble/gravel	High-gradient riffle to low-gradient riffle; LWD present	Boulder/cobble	Northern tributary flows from springs on east side of road and possibly from west side (east side of culvert not found). Joins other tributary approximately 150 feet downstream of the road.
AR 40	Tributary of AR 39b (tributary of Wynoochee River)	13.7	Perennial	Resident downstream, none documented upstream	High-gradient riffle with small pools; LWD present	Cobble/gravel	Cascade, then low-gradient riffle; LWD present	Boulder/cobble	Stream channel has very high gradient on downstream side of road. Stream passes through small ravine on downstream side of road.
AR 41	Tributary of Wynoochee River	13.8	Intermittent	None documented	Low-gradient riffle, culvert, low-gradient riffle; LWD present	Sand/gravel	Plunge pool, then low-gradient riffle	Gravel/cobble	Stream associated with wetland.

Table 4-6 (continued). Stream and fish habitat observed in the Camp Grisdale Road study area and project corridor.

Habitat Unit	Stream Name or Identification	Approximate Mileage from Start of Project Corridor	Stream Flow Type	Presence of Priority Anadromous or Resident Fish ^a	Upstream Habitat Description ^b	Upstream Substrate Type	Downstream Habitat Description	Downstream Substrate Type	Hydrologic Condition
AR 43	Tributary of AR 41 (tributary of Wynoochee River)	14.5	Intermittent	None documented	Low-gradient riffle, culvert, then low-gradient riffle; LWD present	Cobble/gravel	Plunge pool, then low-gradient riffle	Sand/gravel	Stream associated with wetland.
AR 44	Major tributary of Anderson Creek (AR 48)	14.9	Perennial	Anadromous downstream; resident upstream	Low-gradient riffle and pool complexes; LWD present	Cobble/boulder	Low-gradient riffle; plunge pool, then low-gradient riffle	Bedrock/gravel	Major tributary of Anderson Creek confluence approximately 150 feet from edge of forest road. Asphalt pad located below downstream end of culvert.
AR 45	Tributary of Anderson Creek (AR 48)	15.1	Intermittent	None documented	High-gradient riffle and pool complex; LWD present	Cobble/gravel	High- and low-gradient riffle complex	Cobble/gravel	Stream associated with wetland that flows into AR 44.
AR 46	Tributary of Anderson Creek (AR 48)	15.8	Intermittent/wetland drainage	Resident upstream, no fish habitat upstream	Open-water wetland (POW) flowing to downstream channel	Silt/organic	Cascade, then low-gradient riffle; LWD present	Cobble/gravel	Streamflow on downstream side of road has eroded hillside.
AR 47	Tributary of Anderson Creek (AR 48)	16.1	Intermittent	None documented	Low-gradient riffle, lateral scour pool, then low-gradient riffle and plunge pool	Sand/gravel	Plunge pool, low-gradient riffle and lateral scour pool, low-gradient riffle; LWD present	Gravel/cobble	Stream associated with wetland on downstream side of road.
AR 48	Anderson Creek	16.3	Intermittent	Anadromous	Low-gradient riffle and glide, poorly defined channel; LWD present	Gravel/cobbles	Plunge pool and low-gradient riffle, pool complexes; LWD present	Cobble/gravel	Riparian corridor of Anderson Creek. Two culverts; one appears to be for high flow rates only and another for all flow rates.
AR 49	Tributary of Anderson Creek (AR 48)	16.4	Intermittent/wetland drainage	None documented	Low-gradient riffle and glide, poorly defined channel within wetland; LWD present	Gravel/cobbles	Plunge pool and low-gradient riffle, pool complexes, flows into wetland; LWD present	Cobble/gravel	Anderson Creek tributary. Stream flows through wetland on both upstream and downstream sides of road.
AR 50a	Tributary of Wynoochee River	17.0	Perennial	Gradient too steep; fish may use lower reach at confluence with Wynoochee River	Low-gradient riffle, then cascade	Cobble/gravel	Plunge pool and high-gradient riffle; LWD present	Boulder in high-gradient riffle	Ground water seeps cascading down both sides of road feed into stream channel downstream of road. Very steep gradient to Wynoochee River valley below.

Table 4-6 (continued). Stream and fish habitat observed in the Camp Grisdale Road study area and project corridor.

Habitat Unit	Stream Name or Identification	Approximate Mileage from Start of Project Corridor	Stream Flow Type	Presence of Priority Anadromous or Resident Fish ^a	Upstream Habitat Description ^b	Upstream Substrate Type	Downstream Habitat Description	Downstream Substrate Type	Hydrologic Condition
AR 50b	Tributary of Wynoochee River	17.1	Perennial	Gradient too steep; fish may use lower reach at confluence with Wynoochee River	Roadside ditch	Silt/organic	100-foot drop to high-gradient riffle/cascade pool complex	Cobble/gravel	Ground water seeps cascading down both sides of road feed into stream channel upstream and downstream of road. Very steep gradient to Wynoochee River valley below. Landslide area and undermined slope at culvert outlet.
AR 50c	Tributary of Wynoochee River	17.2	Intermittent	Gradient too steep; fish may use lower reach at confluence with Wynoochee River	Cascade/high-gradient riffle/low-gradient riffle	Gravel	Culvert extends 50 feet down steep slope/cascade/plunge pool/high-gradient riffle pool complexes	Boulder/cobble	Ground water seeps cascading down both sides of road feed into stream channel downstream of road. Stream was dry from east side of road through culvert. Spring emerges at west end of culvert where it drains to a cascade. Flow here was from springs, not culvert. Very steep gradient to Wynoochee River valley below.
AR 50d	Tributary of Wynoochee River	17.3	Intermittent	Gradient too steep; fish may use lower reach at confluence with Wynoochee River	High-gradient riffle pool complexes	Boulder/cobble	Plunge pool/high-gradient riffle pool complexes	Boulder/cobble	Ground water seeps cascading down both sides of road feed into stream channel downstream of road. Water appears to flow from middle of culvert; culvert is broken in center. Very steep gradient to Wynoochee River valley below. Water flows from downstream end of culvert, and springs provide additional streamflow for perennial stream downstream of culvert.

LWD = large woody debris.

^a Fish presence is based on information from USDA Forest Service (2002) and updated by information from WDFW (2004b).^b Habitat descriptions are based on the method of McCain et al. (1990).

high-gradient riffles and cascades. The pools observed throughout the project corridor are generally small, consisting of plunge pools, in-channel pools, backwater pools, and lateral scour pools. Additionally, 15 of the 46 streams have large woody debris present in the stream channel (see the biological resources report [Herrera 2005b]). Many of the observed pools are small, and though large woody debris is often present, only approximately a third of the observed streams provide fair to good fish habitat.

Stream substrate types were also documented as part of the quantitative and qualitative survey of streams in the project corridor. Twenty-six percent of the streams (11 streams) have sand or silt as the dominant or secondary substrate type within the project corridor. These substrate types do not provide good fish spawning habitat. Forty-nine percent of 46 streams (21 streams) were observed to have potential spawning and/or rearing habitat present both upstream and downstream of the culvert crossing under Camp Grisdale Road. An additional eight streams had spawning and/or rearing habitat for fish only downstream of their crossing of Camp Grisdale Road. Therefore, good fish habitat exists in the majority of the streams that cross the road. Some fish habitat is not accessible due to a barrier at the culvert (see Fish Passage Barriers section).

Fish Passage Barriers

Figure 4-6 depicts fish presence and fish barriers in streams within the vicinity of the project corridor. Table 4-5 lists fish presence in streams within the project corridor. As discussed above, the gradients of the culverts and streams are generally less steep from the beginning of the project corridor to approximately AR 37 at milepost 13.0. After that point, the stream and culvert gradients become steeper, in some cases too steep for anadromous fish to pass. Table 4-7 provides a summary of fish habitat presence both up and downstream of culverts under Camp Grisdale Road and the potential for fish passage through them.

Culverts were evaluated to determine if they would be recommended for replacement with fish-passable culverts based on the following criteria: 1) fish habitat exists both upstream and downstream of the culvert, 2) no fish passage barriers exist downstream of the culvert, and 3) the slope of the replacement culvert would be less than a 20 percent slope. Table 4-7 summarizes these conditions for each stream and provides a preliminary list of recommended fish-passable culvert replacements. The crossings located at Save Creek (AR 35) and the major tributary to Schafer Creek (AR 22) currently have a bridge and a fish-passable culvert, respectively.

Seventeen streams containing fish habitat have fish barriers, most due to perched culverts (ARs 9, 11, 19, 25, 27b, 30a, 30b, 37a, 37b, 39a, 39b, 40, 41, 44, 45, 46, and 48). Table 4-7 indicates whether the gradient is too steep to make fish-passable culvert replacement at these streams feasible. Based on the criteria documented in Table 4-7, eight of the 17 culverts are proposed for replacement with fish-passable structures. Culverts at seven locations (ARs 9, 11, 19, 27, 30a, 30b, and 48) are proposed for replacement with fish-passable culverts, and a bridge crossing is proposed at AR 25 (Schafer Creek). The other streams that had documented priority resident or anadromous fish presence where culverts could be replaced are not considered for

Table 4-7. Fish habitat and culvert conditions observed in the Camp Grisdale Road study area and project corridor.

Habitat Unit	Stream Name or Identification	Approximate Mileage from Start of Project Corridor	Stream Flow Type	Presence of Priority Anadromous or Resident Fish	Type of Upstream Fish Habitat Available	Type of Downstream Fish Habitat Available	Culvert Is a Fish Passage Barrier ^a	Slope of Culvert for Replacement for Those That Are Fish Barriers ^b	Recommended Fish-passable Structure Replacement ^c
AR 5	Tributary of AR 6 (tributary of Schafer Creek)	4.4	Intermittent/wetland drainage	None documented	None	Rearing habitat	No	NA	NA
AR 6	Tributary of Schafer Creek (AR 25)	4.4	Perennial	None documented	Rearing habitat	Rearing habitat	No	NA	NA
AR 8	Tributary of Schafer Creek (AR 25)	4.9	Intermittent	None documented	Rearing habitat	Rearing habitat	No	NA	NA
AR 9	Tributary of Schafer Creek (AR 25)	5.1	Perennial	None documented	Rearing and some spawning habitat	Rearing and some spawning habitat	Yes	<10%	Yes
AR 11	Tributary of Schafer Creek (AR 25)	5.4	Perennial	None documented	Rearing and some spawning habitat	Rearing and some spawning habitat	Yes	<10%	Yes
AR 12	Tributary of Schafer Creek (AR 25)	5.5	Perennial	None documented	Primarily rearing with some poor spawning habitat	Rearing habitat	No	NA	NA
AR 13	Tributary of Schafer Creek (AR 25)	5.6	Perennial	None documented	Poor fish habitat	Low-gradient riffle and glide	No	NA	NA
AR 14	Tributary of Schafer Creek (AR 25)	5.9	Perennial	None documented	Rearing habitat	Rearing and some downstream spawning habitat	No	NA	NA
AR 16a	Tributary of Schafer Creek (AR 25)	6.1	Perennial	None documented	Poor fish habitat	Poor fish habitat	No	NA	NA
AR 16b	Tributary of Schafer Creek (AR 25)	6.2	Perennial	None documented	No fish habitat	Possible rearing habitat	No	NA	NA
AR 16c	Tributary of Schafer Creek (AR 25)	6.2	Intermittent	None documented	No fish habitat	Rearing and potential spawning habitat	NA	NA	NA
AR 17	Tributary of AR 22 (tributary of Schafer Creek)	6.5	Intermittent	None documented	No fish habitat	Potential rearing habitat	NA	NA	NA
AR 19	Tributary of AR 22 (tributary of Schafer Creek)	6.6	Perennial	Anadromous and resident, partial fish blockage at culvert	Rearing and some spawning habitat	Rearing and potential spawning habitat	Yes	<20%	Yes

Table 4-7 (continued). Fish habitat and culvert conditions observed in the Camp Grisdale Road study area and project corridor.

Habitat Unit	Stream Name or Identification	Approximate Mileage from Start of Project Corridor	Stream Flow Type	Presence of Priority Anadromous or Resident Fish	Type of Upstream Fish Habitat Available	Type of Downstream Fish Habitat Available	Culvert Is a Fish Passage Barrier ^a	Slope of Culvert for Replacement for Those That Are Fish Barriers ^b	Recommended Fish-passable Structure Replacement ^c
AR 21	Tributary of AR 22 (major tributary of Schafer Creek)	7.3	Perennial/wetland drainage	None documented, fish blockage at culvert	No fish habitat	Potential rearing habitat	NA	NA	NA
AR 22	Major tributary of Schafer Creek (AR 25)	7.5	Perennial	Anadromous downstream of culvert, resident above	Rearing and some spawning habitat	Rearing and some spawning habitat	No	NA	No
AR 23a	Tributary of Schafer Creek (AR 25)	7.7	Intermittent/wetland drainage	None documented	Potential rearing habitat	No fish habitat	No	NA	NA
AR 23b	Tributary of Schafer Creek (AR 25)	7.7	Intermittent/wetland drainage	None documented	Potential rearing habitat	No fish habitat	No	NA	NA
AR 24a & b	Tributary of Schafer Creek (AR 25)	8.0	Intermittent/wetland drainage	None documented	No fish habitat	No fish habitat	NA	NA	NA
AR 24c	Tributary of Schafer Creek (AR 25)	8.1	Intermittent	None documented	No fish habitat	Potential rearing habitat	NA	NA	NA
AR 25	Schafer Creek	8.4	Perennial	Anadromous fish downstream of culvert, resident upstream	Rearing and some spawning habitat	Rearing and some spawning habitat	Yes	<20%	Yes, may require bridge crossing
AR 27b	Neil Creek (tributary of Schafer Creek [AR 25])	9.2	Perennial	Resident and anadromous	Rearing and some spawning habitat	Rearing and some spawning habitat	Yes	<20%	Yes
AR 29a, b, & c	Tributary of Wynoochee River	9.9	Perennial/wetland drainage	Anadromous	Wetland rearing habitat	Wetland rearing habitat; potential spawning habitat approximately 0.25 miles downstream of project corridor	No	<20%	No
AR 30a	Tributary of Wynoochee River	10.5	Intermittent/wetland drainage	Anadromous fish downstream, none documented above (no habitat exists above)	Potential rearing habitat	Rearing and potential spawning habitat	Yes	<20%	Yes

Table 4-7 (continued). Fish habitat and culvert conditions observed in the Camp Grisdale Road study area and project corridor.

Habitat Unit	Stream Name or Identification	Approximate Mileage from Start of Project Corridor	Stream Flow Type	Presence of Priority Anadromous or Resident Fish	Type of Upstream Fish Habitat Available	Type of Downstream Fish Habitat Available	Culvert Is a Fish Passage Barrier ^a	Slope of Culvert for Replacement for Those That Are Fish Barriers ^b	Recommended Fish-passable Structure Replacement ^c
AR 30b	Tributary of Wynoochee River	10.5	Intermittent	Anadromous fish downstream, none documented upstream	Rearing habitat	Rearing habitat	Yes	<20%	Yes
AR 31	Tributary of Save Creek (AR 35)	10.8	Intermittent	None documented	Poor fish habitat	Poor fish habitat	NA	NA	NA
AR 34	Tributary of Save Creek (AR 35)	11.6	Perennial/ wetland drainage	None documented	Poor fish habitat	Poor fish habitat	NA	NA	NA
AR 35	Save Creek	11.8	Perennial	Anadromous upstream and downstream (after bridge constructed)	Rearing and some spawning habitat	Rearing and some spawning habitat	No	NA	NA
AR 36a	Tributary of Save Creek (AR 35)	12.2	Perennial	None documented	Possible rearing habitat, poor fish habitat	Rearing habitat	No	NA	NA
AR 36b	Tributary of Save Creek (AR 35)	12.2	Intermittent	None documented	Poor fish habitat	Poor fish habitat	NA	NA	NA
AR 37a	Tributary of Wynoochee River	13.0	Perennial	Resident downstream, none documented upstream	Primarily rearing habitat	Primarily rearing habitat, potential spawning habitat more than 100 feet from project corridor where low gradient riffle is present	Yes	>20%	No (slope too steep)
AR 37b	Tributary of Wynoochee River	13.0	Perennial	Resident downstream, none documented upstream	Primarily rearing habitat	Primarily rearing habitat, potential spawning habitat more than 100 feet from project corridor where low gradient riffle is present	Yes	>20%	No (slope too steep)
AR 39a	Tributary of tributary of Wynoochee River (AR 39b)	13.4	Perennial	Resident downstream, none documented upstream	Primarily rearing habitat	Primarily rearing habitat, potential spawning habitat more than 100 feet from project corridor where low gradient riffle is present	Yes	>20%	No (slope too steep)

Table 4-7 (continued). Fish habitat and culvert conditions observed in the Camp Grisdale Road study area and project corridor.

Habitat Unit	Stream Name or Identification	Approximate Mileage from Start of Project Corridor	Stream Flow Type	Presence of Priority Anadromous or Resident Fish	Type of Upstream Fish Habitat Available	Type of Downstream Fish Habitat Available	Culvert Is a Fish Passage Barrier ^a	Slope of Culvert for Replacement for Those That Are Fish Barriers ^b	Recommended Fish-passable Structure Replacement ^c
AR 39b	Tributary of Wynoochee River	13.4	Perennial	Resident downstream, none documented upstream	Primarily rearing habitat	Primarily rearing habitat, potential spawning habitat more than 100 feet from project corridor where low gradient riffle is present	Yes	>20%	No (slope too steep)
AR 40	Tributary of tributary of Wynoochee River (AR 39b)	13.7	Perennial	Resident downstream, none documented upstream	Primarily rearing habitat	Primarily rearing habitat, potential spawning habitat more than 100 feet from project corridor where low gradient riffle is present	Yes	>20%	No (slope too steep)
AR 41	Tributary of tributary of Wynoochee River	13.8	Intermittent	None documented	Potential rearing habitat	Primarily rearing with some potential spawning habitat	Yes during low water	> 20%	No (slope too steep)
AR 43	Tributary of tributary of Wynoochee River	14.5	Intermittent	NA	Poor fish habitat	Primarily rearing with some potential spawning habitat	NA	NA	NA
AR 44	Major tributary of Anderson Creek (AR 48)	14.9	Perennial	Anadromous downstream, resident upstream	Primarily rearing with some potential spawning habitat	Primarily rearing with potential spawning habitat	Yes	> 20%	No (slope too steep)
AR 45	Tributary of Anderson Creek (AR 48)	15.1	Intermittent	None documented	Possible rearing habitat	Primarily rearing with some potential spawning habitat	Yes	> 20%	No (slope too steep)
AR 46	Tributary of Anderson Creek (AR 48)	15.8	Intermittent/wetland drainage	Resident downstream, no fish habitat upstream	No fish habitat	Primarily rearing habitat, potential spawning habitat more than 100 feet from project corridor where low gradient riffle is present	Yes	NA	NA
AR 47	Tributary of Anderson Creek (AR 48)	16.1	Intermittent	None documented	Primarily rearing habitat	Primarily rearing habitat, potential spawning habitat more than 100 feet from project corridor where low gradient riffle is present	No	NA	NA
AR 48	Riparian corridor of Anderson Creek	16.3	Intermittent	Anadromous	Rearing and potential spawning habitat	Rearing and potential spawning habitat	Yes	<20%	Yes

Table 4-7 (continued). Fish habitat and culvert conditions observed in the Camp Grisdale Road study area and project corridor.

Habitat Unit	Stream Name or Identification	Approximate Mileage from Start of Project Corridor	Stream Flow Type	Presence of Priority Anadromous or Resident Fish	Type of Upstream Fish Habitat Available	Type of Downstream Fish Habitat Available	Culvert Is a Fish Passage Barrier ^a	Slope of Culvert for Replacement for Those That Are Fish Barriers ^b	Recommended Fish-passable Structure Replacement ^c
AR 49	Tributary of Anderson Creek (AR 48)	16.4	Intermittent/wetland drainage	None documented	Poor fish habitat	Rearing and some potential spawning habitat	NA	NA	NA
AR 50a	Tributary of Wynoochee River	17.0	Perennial	Gradient too steep; fish may use lower reach at confluence with Wynoochee River	No fish habitat	Potential rearing habitat, no spawning habitat within 0.25 miles of edge of FR 22	NA	NA	NA
AR 50b	Tributary of Wynoochee River	17.1	Perennial	Gradient too steep; fish may use lower reach at confluence with Wynoochee River	No fish habitat	Potential rearing habitat, no spawning habitat within 0.25 miles of edge of FR 22	NA	NA	NA
AR 50c	Tributary of Wynoochee River	17.2	Intermittent	Gradient too steep; fish may use lower reach at confluence with Wynoochee River	No fish habitat	Potential rearing habitat, no spawning habitat within 0.25 miles of edge of FR 22	NA	NA	NA
AR 50d	Tributary of Wynoochee River	17.3	Intermittent	Gradient too steep; fish may use lower reach at confluence with Wynoochee River	No fish habitat	Potential rearing habitat, no spawning habitat within 0.25 miles of edge of FR 22	NA	NA	NA

^a No—Culvert was not observed to be a fish passage barrier.

NA—Culvert may be a fish passage barrier, but no fish habitat is available upstream of culvert.

Yes (boldface type) – Has been determined to be a fish-passage barrier with fish habitat upstream and downstream.

^b NA—Slope of culvert may or may not be too steep for fish passage, but no fish habitat exists upstream of culvert, so fish passage culvert is not applicable.

^c NA—No fish habitat is available above culvert, so recommendation for fish-passable culvert is not applicable.

No—Construction of fish passage culvert is not feasible.

Yes (boldface type)—Recommended for replacement.

replacement, because fish habitat above these culverts was poor and generally too steep to warrant it. Designs for the fish-passable structures are provided in Appendix D of the biological assessment (Herrera 2005c).

Threatened and Endangered Species

This section discusses the federally listed threatened, endangered, candidate, and proposed wildlife and fish species that may use or have been documented within the vicinity of the project corridor. This section differs from the effects section for nonfederally listed species in that it follows a format for a biological assessment. The following topics are discussed for each species: status and distribution, species occurrence within the study area, designated critical habitat. Potential project impacts to threatened and endangered species for both the preferred and no-action alternatives, conservation measures (or mitigation measures), and a recommended effect determination, are discussed under the Impacts and Mitigation section.

There are two programmatic biological opinions addressing activities within the Olympic National Forest that are similar to the proposed Camp Grisdale Road reconstruction project. In 2003, the Forest Service prepared a programmatic biological assessment regarding routine Forest Service management activities, including road reconstruction. NOAA Fisheries and USFWS each issued a biological opinion regarding the effects of routine land management actions on federally listed species occurring in the Olympic National Forest. These species are marbled murrelet (murrelet) (*Brachyramphus marmoratus*), northern spotted owl (*Strix occidentalis caurina*), bald eagle (*Haliaeetus leucocephalus*), and bull trout (*Salvelinus confluentus*). The biological opinion also addressed effects on critical habitat for marbled murrelets and northern spotted owl.

In April 2002, the Forest Service invited the USFWS to participate in an interagency effort to develop an aquatic restoration program, with the objective of restoring access to fish habitat through culverts on federal lands in Washington and eastern Oregon where access is currently blocked by existing barriers. The Forest Service then submitted a biological assessment regarding this program in April 2003, which was revised June 12, 2003, to include additional conservation measures (USDA Forest Service 2003). The biological assessment described a proposal to replace culverts and the resulting effects on listed species and designated critical habitat in 11 national forests and one national scenic area in Washington and eastern Oregon. The USFWS and NOAA Fisheries responded with biological opinions regarding the proposed action. Detailed information regarding culvert replacement impacts and federally listed, proposed, and candidate anadromous fish species is provided in these biological opinions (USFWS 2003b; NOAA Fisheries 2003b) and summarized below where appropriate.

A biological assessment (Herrera 2005c) was prepared and submitted to USFWS for this amended EA, the current lists of federal threatened and endangered species were reviewed with the USFWS and NOAA Fisheries in 2006 and 2007. The list of forest sensitive species was reviewed in 2007. Only one new species has been listed since the original draft EA was issued.

The Puget Sound Steelhead Ecologically Significant Unit was listed as threatened in May 2007 (NOAA Fisheries 2007). However, this species is not present in the project vicinity.

Vegetation

A plant survey was completed to determine the presence of federally listed threatened or endangered plant species within the vicinity of the project corridor. No federally listed threatened or endangered plant species were found.

Fish and Fish Habitat

Bull Trout

Status and Distribution

The Coastal-Puget Sound bull trout distinct population segment (DPS) encompasses all Pacific Coast drainages within Washington, including Puget Sound. The Coastal-Puget Sound bull trout is federally listed as threatened and is a state species of concern. This population segment is discrete because the Pacific Ocean and the crest of the Cascade Mountain range geographically segregate it from subpopulations. The population segment is significant to the species as a whole because it is thought to contain the only anadromous forms of bull trout in the contiguous United States, thus occurring in a unique ecological setting.

Species and Habitat Description

The bull trout occurs in four life history forms: anadromous (associated with marine waters), resident (remaining in headwater areas), adfluvial (associated with lake areas), and fluvial (associated with river areas). Bull trout have more specific habitat requirements than other salmonids and are most often associated with undisturbed habitat with diverse cover and structure. Spawning and rearing activities are restricted primarily to relatively pristine, cold streams, often within headwater reaches. Water temperature is also a critical factor for bull trout, and areas where water temperatures exceed 15 degrees Celsius (°C) limit their distribution (Rieman and McIntyre 1993). Spawning occurs in upstream areas as water temperature decreases to approximately 8°C (WDFW 1998).

Species Occurrence in the Project Corridor

WDFW (1998) documented presence of bull trout in the Satsop River, but not in the Wynoochee River and its tributaries. Although bull trout have not been documented in the study area and its vicinity, potential habitat does exist within the project corridor and study area (Table 4-5). Migratory bull trout may occur in other fifth-field watersheds¹ adjacent to watersheds with bull trout spawning populations. Fifth-field watersheds where migratory bull trout have the potential to occur and that contain at least some Olympic National Forest lands include the East Fork Humptulips, West Fork Humptulips, Stevens Creek, East Fork Satsop, Middle Fork Satsop, West

¹ Fifth-field watersheds are those that are approximately 24,700 to 49,400 acres. They are based on a standardized hydrologic unit code (HUC) classification system developed in the mid-1970s by the U.S. Geological Survey under sponsorship of the Water Resources Council.

Fork Satsop, upper Wishkah, middle Wynoochee, and lower Wynoochee. With the exception of the Satsop watershed, no bull trout have ever been observed on national forest lands within these watersheds (USFWS 2003b). Focused bull trout surveys within the Satsop watershed have failed to detect bull trout in recent years (USFWS 2003b).

Critical Habitat

Critical habitat was designated in September 2005 for the Coastal-Puget Sound bull trout distinct population segment (DPS). The USFWS (2005) has designated approximately 3,780 miles of streams and 110,364 acres of lakes and reservoirs in Oregon, Washington, Idaho, and Montana as critical habitat for the bull trout, a threatened species protected under the Endangered Species Act. In Washington, 1,519 stream miles, 26,542 acres of lakes or reservoirs, and 966 miles of marine shoreline have been designated as critical habitat for bull trout. All major watersheds within the Olympic critical habitat unit (CHU) 27 have been designated as critical habitat for bull trout. The CHU 27 designation includes the Chehalis watershed, which contains the Wynoochee River (see Biological Assessment [Herrera 2005c]). According to the USFWS (Michaels 2005), critical habitat for bull trout extends from the mouth of the Wynoochee River to the Olympic National Forest boundary. None of the tributaries flowing into the Wynoochee River that cross the project corridor have been surveyed by USFWS to determine presence or absence of bull trout and its habitat for the purposes of determining critical habitat to include in the listing. None of these areas have as yet been designated as critical habitat.

The USFWS (2005) designated bull trout critical habitat based on the following criteria: “*an area had to currently be occupied (as documented within the last 20 years) and provide one or more of the following functions: 1) spawning, rearing, foraging, or over-wintering habitat to support essential existing bull trout local populations; 2) movement corridors necessary for maintaining essential migratory life-history forms; and/or 3) suitable habitat that is considered essential for recovering existing local populations that have declined or that need to be re-established to achieve recovery. Identification of these areas was based on the existence of primary constituent elements.*”

Wildlife

Marbled Murrelet

Status and Distribution

The marbled murrelet ranges from the Aleutian archipelago to central California. The distribution of marbled murrelets becomes more disjunct at the southern extreme of their range. Marbled murrelets are generally found in near-shore ocean waters but come inland to nest in forests. Marbled murrelet nests are not evenly distributed between the coast and the inland extremes of their range (up to 55 miles from marine waters in Washington state), but are observed most often within about 19 miles of the ocean.

On October 1, 1992, USFWS published a Federal Register listing of the marbled murrelet as a threatened species in Washington, Oregon, and northern California, effective September 28,

1992 (57 CFR 45328) (USDI 1992). To estimate the population size of marbled murrelets, researchers must rely on at-sea counts, because terrestrial data are difficult to collect on a wide scale and are extremely limited. The entire North American population of the marbled murrelet is currently estimated to be around 950,000 birds (Huff et al. 2003, cited in McShane et al. 2004). Earlier estimates ranged from 300,000 (Ralph et al. 1995, cited in McShane et al. 2004) to 600,000 birds (reviewed in DeGange 1996, cited in McShane et al. 2004).

The 5-year status review of marbled murrelets (McShane et al. 2004) lists the following primary ongoing threats to marbled murrelet terrestrial habitat.

- Loss of suitable nesting habitat from 1992 to 2003
- Effects of current land ownership on the amount of existing nesting habitat and habitat distribution and quality
- Projected future trends of suitable habitat
- Natural disturbances such as wildfire, insects/disease, and windthrow effects on nesting habitat
- Land management practices affecting nesting habitat availability and quality, as well as survival and reproductive rates
- Fragmentation and edge effects on forest habitat
- Effects of noise from recreational activity, human development, and other disturbances on adults and chicks.

Other threats to the marbled murrelet's existence include the low reproductive rate, dependence on older forests (which are now scarce and heavily fragmented) for nesting, and adult mortality due to entanglement in gill nets and encounters with oil spills (USFWS 1997).

The status review (McShane et al. 2004) provides annual data showing that all populations in Oregon, Washington, and California are in decline, with mean annual rates of decline per decade between 2.1 and 6.2 percent. Marbled murrelet numbers also declined drastically in relation to historical logging (1850–1980) in Washington, Oregon, and California (McShane et al. 2004). Current trend data are limited because comprehensive, standardized studies for all of Washington, Oregon, and California have begun only in the past few years.

Threats to the existence of the marbled murrelet include loss of genetic variation among populations; low recolonization potential; declining populations; and disease (McShane et al. 2004). The probability of extinction on the Olympic Peninsula coast south of Destruction Island is forecast to be 0 percent within 40 years and 25 percent within 100 years (if all factors remain as they are at present) (McShane et al. 2004). The area from Destruction Island to Cape Flattery has an extinction probability of 0 percent within 40 years and 100 percent within 100 years.

Ongoing conditions continue to threaten the existence of the marbled murrelet in Washington,

Oregon and California, even though several threats appear to have been reduced since the species was listed in 1992, including the annual rate of habitat loss, loss of occupied sites due to survey error, and mortality from gill-net fishing. The population declines appear to be primarily related to the loss of nesting habitats due to logging and urbanization over the past 150 years.

According to the status review, it is unrealistic to expect that the species will recover before there is significant improvement in the amount and distribution of suitable nesting habitat (McShane et al. 2004).

Species and Habitat Description

The marbled murrelet is a small seabird of the family Alcidae in the order Charadriiformes. Classification of the marbled murrelet species was recently divided, so that there is now the marbled murrelet in North America (*B. marmoratus*) and the long-billed murrelet in Asia (*B. perdix*).

Murrelet nesting habitat is generally considered to be old growth or mature trees within about 55 miles of marine environments. In an analysis of Pacific Northwest nest sites, the mean elevation was 1,089 feet and the mean distance to the coast was 10 miles (Nelson and Hamer 1995). All nests found were below 3,600 feet in elevation. Most nest stands were located within 19 miles of marine waters, and all were within 25 miles. However, occupied stands have been documented much farther inland. In Washington, 36 percent of occupied stands are more than 29 miles from marine waters, the farthest found 52.2 miles inland.

The marbled murrelet prefers to nest in mature coniferous stands, or younger stands with interspersed large trees, that may provide nesting opportunities. Mated pairs typically lay a single egg on a naturally occurring platform formed by the wide, mossy limbs of a mature tree (typically 7 inches in diameter or greater), usually 100 feet or more above ground, with canopy cover above. The single egg hatches within 28 days, and chicks fledge at 35 to 40 days. Upon fledging, the chicks immediately fly to marine waters to begin feeding on small fishes and other aquatic animals.

The breeding period in Washington is estimated to last from April 1 to September 15. The early and late breeding seasons are from April 1 to August 5 and from August 6 to September 15, respectively (USFWS 2003b). Almost all chicks in Washington are hatched by August 6. Nest success appears to be quite low, primarily due to predation on eggs and chicks (USFWS 2003b). According to the status review, nesting success was only 38 to 54 percent on the Olympic Peninsula coast from the Columbia River to Destruction Island (Zone 1) (McShane et al. 2004). Nests located near forest edges appear to be much more susceptible to predation, especially by corvids.

Adults fly to marine waters to obtain food for the chicks and return to the inland nest. Feeding of the young occurs most frequently at dawn or dusk. Adult marbled murrelets approach and leave their nests at high speed, primarily at dusk and dawn or at night, making nest detection difficult.

Species Occurrence in the Project Corridor

Historically, marbled murrelets have been observed occupying old-growth conifer stands on Olympic National Forest land from 0.5 miles and greater distances to the east and west of the project corridor (USDA Forest Service 2004c; WDFW 2004a). Occupancy is determined by visually observing murrelets below the tallest canopy within a site.

Marbled murrelet surveys were conducted in spring and summer of 2004 and 2005 by biologists at Sites MM-A, MM-C, MM-D, MM-E, and MM-F (Figure 4-7). Site MM-B was dropped from the study in 2004 after an evaluation of habitat by WDFW. Surveys were conducted using the Pacific Seabird Group standard 2-year protocol (Mack et al. 2003) (see Herrera 2005c for more details). As a result of these surveys, two additional marbled murrelet occupied sites, Sites MM-C and MM-D, were found along the project corridor, in addition to Site MM-F. Sites MM-C and MM-D were surveyed in the summer of 2004 and 2005 and were determined to be occupied. Site MM-F was determined to be occupied historically through Forest Service surveys. Marbled murrelets were also detected in 2004 above the canopy at Site MM-A, located in the southern 1.5 miles of the project corridor. Additional surveys of Site MM-A conducted in 2005 indicate no occupancy for this site.

Critical Habitat

Critical habitat for marbled murrelet was designated in 1996. Critical habitat is defined in section 3(5)(A) of the Endangered Species Act as “(i) the specific areas within the geological area occupied by the species, at the time it is listed ... on which are found those physical and biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geological area occupied by a species at the time it is listed...upon a determination...that such areas are essential for the conservation of the species.”

The Olympic National Forest contains 411,900 acres of designated marbled murrelet habitat within four units (WA-01, WA-02, WA-03, and WA-06). The amount of suitable habitat within these critical habitat units is 262 acres. The WA-03 critical habitat unit contains a total of 162,700 acres.

Approximately 40 acres of critical habitat unit WA-03 is located within the northern portion of the project corridor (Figure 4-7). Critical habitat unit WA-03 is entirely in federal ownership, comprising two late successional reserves (LSRs)—Quinault South LSR 103 and South Hood Canal LSR 104.

All marbled murrelet critical habitat units are expected to provide suitable habitat for population support; some are designated primarily for connectivity, and many are expected to provide both functions. USFWS (2003b) has determined that the physical and biological habitat features associated with the terrestrial environment that support nesting, roosting, and other normal behaviors (referred to as primary constituent elements of critical habitat) are essential to the conservation of the murrelet and require special management considerations.

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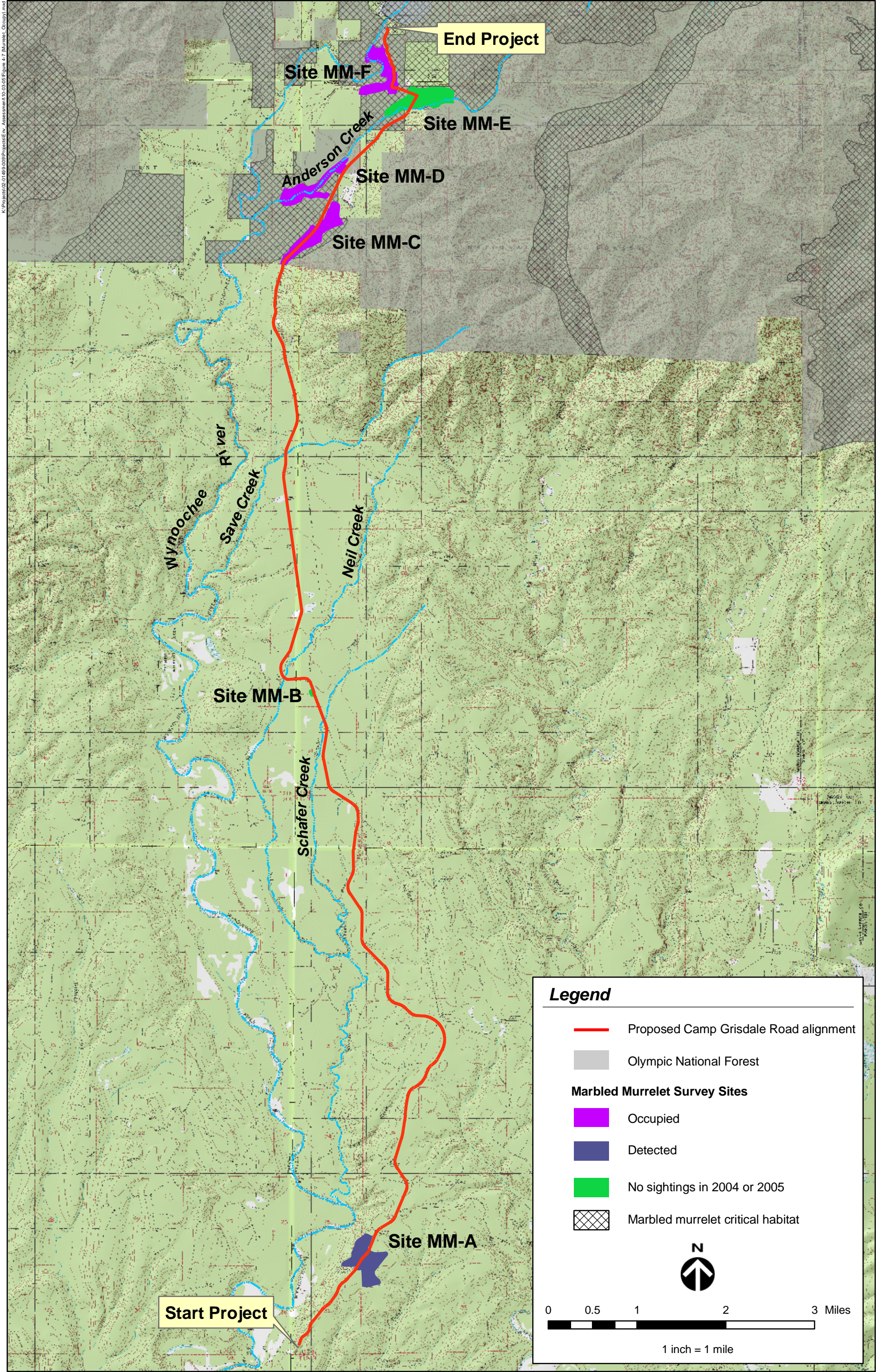


Figure 4-7. Marbled murrelet occupied and detection sites and critical habitat, Camp Grisdale Road project, Grays Harbor County, Washington.

The USFWS (1995; Federal Register Vol. 60) has focused on protecting the following “primary constituent elements: 1) individual trees with potential nesting platforms, 2) forested areas surrounding and contiguous to potential nest trees with canopy height of at least one-half the site-potential tree height, 3) forested areas of at least one-half the site-potential tree height regardless of the presence of potential nest platforms.” The Forest Service identifies potential nest trees as conifers that are 21 inches in diameter at breast height (dbh) or larger. The tree site-potential height is estimated at 200 feet for the critical habitat areas near the project corridor using height growth curve data from USDA Forest Service (1989). These primary constituent elements are deemed essential for providing suitable nesting habitat for successful reproduction of the marbled murrelet.

Marbled murrelets have been documented in mature forest (MOGC) areas, and their habitat would be directly affected by clearing in this area. Suitable habitat for marbled murrelets is defined as forest stands of mature and old-growth conifers or stands of conifers exhibiting an abundance of deformities within approximately 50 miles of the coast (Pacific Seabird Group 2003). The suitable habitat contains trees that are typically 21 inches dbh or greater with branches 4 inches in diameter or larger for platform nesting (Pacific Seabird Group 2003).

Suitable habitat within the project corridor is in the same areas designated as marbled murrelet critical habitat. Therefore, suitable habitat is included in the critical habitat and is referred to only as “critical habitat” throughout the rest of this report.

Forest Service guidance identifies the constituent elements of critical habitat: 1) potential conifer nest trees 21 inches dbh or greater, and 2) mature conifer and immature conifer forest habitat that functions as a buffer, surrounding the nest trees. Critical habitat within 0.25 miles of the project corridor consists of a conifer-dominated stand of immature and mature forest trees surrounding the occasional potential nest tree. Critical habitat that extends away from the project corridor is excellent habitat for marbled murrelets.

The marbled murrelet critical habitat abuts Camp Grisdale Road for a 1.3-mile distance along the 4.5 miles of the road that passes through the Olympic National Forest lands (Figure 4-7). The project corridor encompasses approximately 0.83 acre of mature conifer forest (MOGC), and 0.38 acre of immature forest habitat or 1.2 acres of critical habitat on ONF land. Biologists determined that 16 potential marbled murrelet nest trees (live trees greater than 21 inches dbh) are located within the project corridor along the road. Only two of these trees were found to have adequate nesting platforms during a USFWS site visit in 2006. Biologists also found three snags greater than 21 inches dbh within the project corridor; however, these are not used by murrelets for nesting.

Murrelets have been determined to occupy marbled murrelet survey sites MM-C and MM-D, determined through 2004/2005 protocol surveys, and MM-F, determined through historical surveys (Figure 4-7). These occupied habitat units abut the road for a total distance of 0.9 miles. The protocol surveys are valid for only 2 years, after which time all critical habitat is considered to be occupied.

Northern Spotted Owl

Status and Distribution

The northern spotted owl is found from southwestern British Columbia, western Washington, and western Oregon, into northwestern California south to Marin County (American Ornithological Union 1957; Forsman 1976; Forsman et al. 1984; Gutiérrez et al. 1995, cited in Courtney et al. 2004). The range of the northern spotted owl contacts the range of the California spotted owl (*S. o. occidentalis*) in northern California near the southern end of the Cascade Range (Thomas et al. 1990; USDI 1992; Barrowclough et al. 1999; Haig et al. 2001). Northern spotted owls inhabit forest dominated by Douglas-fir (*Pseudotsuga menziesii*) and western hemlock (*Tsuga heterophylla*) in coastal areas of Washington and Oregon. At higher altitudes on the west slope of the Cascade mountain range, owls commonly use forest stands containing Pacific silver fir (*Abies amabilis*) (Federal Register Vol. 57, No. 10).

The USFWS conducted a review of the northern spotted owl to determine its population status and if it continued to warrant listing under the ESA (Courtney et al. 2004). Of the threats listed in the 2004 status review found that the major ongoing threats that relate to western Washington include the effects of past and current harvest and barred owls (Courtney et al. 2004). Logging rates had declined over the years of the status review, and habitat loss due to fire was found to be a greater threat to northern spotted owl habitat than continued but reduced harvest. Fragmentation and predation linked to fragmentation were thought not to be as great as originally perceived, or the threat may have been reduced as a consequence of lower logging rates.

On federal lands, the northern spotted owl habitat trend analysis conducted by the USFWS (USDI 2004, cited in Courtney et al. 2004) indicated an overall decline of approximately 2.11 percent in the amount of suitable habitat due to range-wide management activities from 1994 to 2003 (Courtney et al. 2004). The majority of management-related habitat loss was in Oregon. Habitat loss due to natural events (e.g., fire) equated to a 3.03 percent decline in available habitat range-wide over this period. Overall, habitat loss range-wide due to all factors has resulted in a total decline of 5.14 percent between 1994 and 2003 (0.57 percent per year).

Species and Habitat Description

The northern spotted owl is a medium sized, round-headed nocturnal owl with dark eyes and dark brown plumage with white spots on the head, neck, and back, and white mottling on the breast and abdomen (USFWS 2004c). The adult female is typically larger than the male (Federal Register Vol. 53, No. 123). Northern spotted owls reach maturity during their third winter and live an average of 8 years (Thomas et al. 1990).

Northern spotted owls have large home ranges and utilize large tracts of forest containing suitable habitat (described below) to meet their biological needs. Median annual pair home range sizes vary from 9,000 acres on the Olympic Peninsula to 3,000 acres in the Oregon Cascades.

Northern spotted owl habitat consists of four components: 1) nesting, 2) roosting, 3) foraging,

and 4) dispersal. However, suitable habitat usually refers to the nesting, roosting, and occasionally the foraging portion of the habitat used by northern spotted owls. Nesting and roosting habitat typically exhibits the following characteristics: high canopy closure (60 to 80 percent); multi-layered, multi-species canopy; large overstory trees (30 inches or more dbh); high incidence of large trees with cavities and deformities; snags; large accumulations of woody debris; and sufficient open space below the canopy for owls to fly (Thomas et al. 1990). These habitat characteristics are usually present in old-growth habitats, although in Washington and Oregon, conifer forests may start developing these characteristics 80 to 120 years after clear-cutting (Natureserve 2004). The sensitive breeding season for spotted owl is for the period March 1 through September 30, and the early breeding season is from March 1 through July 15.

Owls use a broader array of forest types for foraging and dispersal, including fragments and more open habitats, although less is known about these habitats. Foraging habitat is highly variable across the range of the owl depending upon forest structure and prey availability (Federal Register Vol. 57, No. 10). Dispersal habitats provide linkage and connectivity between owl subpopulations and consist of stands with adequate tree size and canopy closure to provide protection from avian predators and some foraging potential (Federal Register Vol. 57, No. 10).

The Forest Service guideline for suitable habitat includes potential nest trees that are 21 inches dbh and larger (including snags), and the surrounding mature and immature forest stand as buffer habitat.

Species Occurrence in the Project Corridor

Based on Priority Habitats and Species database information (WDFW 2004), historically there were northern spotted owls present in the vicinity of the project corridor. Historical northern spotted owl nest locations ranged from 1.5 miles to 6 miles from the project corridor boundary (Table 4-8).

Northern spotted owl activity areas are circular areas, 2.7 miles in radius, centering on locations of nest sites, demarcating the home ranges of individual birds. Historical activity areas for two nest sites overlap the project corridor, and two others are located 0.1 miles to 3.2 miles from the project corridor boundary (Table 4-8). Northern spotted owls were identified on Green Diamond Resource Company land near Save Creek approximately 1.5 miles west of the project corridor. In 1993, Green Diamond Resource Company biologists found barred owls at this site.

Two years of surveys for northern spotted owls were conducted by biologists in spring/summer 2004 and 2005. Surveys were conducted following the standard 2-year, 6-survey protocol (USFWS 1992). Eight northern spotted owl sites (SO-A through SO-H) were surveyed using 13 stations. Site SO-H was eliminated in 2005 due to timber harvest activities in that area. Although suitable habitat is present in several stands along the road corridor, findings from the 2004 and 2005 surveys identified no northern spotted owls in the vicinity of the project corridor. Numerous barred owls were identified in the vicinity of the project corridor. Barred owls were observed at the following northern spotted owl sites along the project corridor in 2004: SO-C, SO-D, SO-E, and SO-F. When barred owls and northern spotted owls come into contact, it is

believed that barred owls, a more aggressive species, out-compete northern spotted owls for habitat (Smith et al. 1997). Although barred and northern spotted owls have occasionally been found to interbreed, more often barred owls tend to take over northern spotted owl habitat, and spotted owls move to habitat at higher elevations.

Table 4-8. Historical northern spotted owl nest and activity areas in relation to the project corridor.

Site Number	Location of Spotted Owl Nest/Activity Center	Number of Owls Observed	Official Status	Date Last Observed	Distance of Nest from Project Corridor Boundary	Distance of Closest Boundary of Activity Center to Project Corridor Boundary
822	T21N/R08W	1	5 (historical, habitat now unsuitable)	1991	3.25 miles	0.6 miles
456	T21N/R06W	2	1 (reproductive pair)	2000	6.0 miles	3.2 miles
441	T22N/R07W	1	4 (single, status unknown)	1994	1.5 miles	0 miles (last 2.2 miles of road within activity center – MP 15.4 to 17.6)
824	T22N/R07W	1	4 (single, status unknown)	1991	2.5 miles	0.1 miles
823	T22N/R08W	1	3 (resident single)	1991	1.9	0 (from road MP 12.5 to 15.5)

The best suitable habitat for the northern spotted owl within the project corridor is located on Olympic National Forest lands within the critical habitat areas for marbled murrelet. Conditions of this habitat are discussed in the marbled murrelet section. Approximately 1.2 acres of suitable northern spotted owl habitat falls within the project corridor. Approximately, 19 potential nest trees (trees greater than 21 inches dbh including snags) within the project corridor are expected to be felled or damaged due to the project. However, these downed trees would be left onsite to provide habitat for animals that use downed logs. Suitable habitat for northern spotted owls in the vicinity of the project corridor is fragmented and disturbed by roads and timber harvest.

Critical Habitat

In order to protect remaining critical late-successional and mature forest habitat for the northern spotted owl, and to reduce fragmentation, the USFWS designated several critical habitat units in 1991 (Federal Register Vol. 57, No. 10). There are 11 critical habitat areas located on the Olympic Peninsula, but no critical habitat lies within 1 mile of the proposed project.

In 1996, via a proposed special 4(D) rule under the Endangered Species Act, the USFWS sought to establish six northern *special emphasis areas* (SEA) in Washington state in which incidental

take prohibitions would continue to apply. The areas proposed by USFWS were designed to protect northern spotted owl habitat on nonfederal lands and were similar to the 10 *northern spotted owl special emphasis areas* (SOSEA) proposed by the Washington Forest Practices Board (Federal Register Vol. 61, No. 92). The closest of these special emphasis areas are the Hoh-Clearwater coastal link and the Mineral Block link, which lie more than 20 miles to the north and east of the project corridor, respectively. No designated special emphasis areas or northern spotted owl special emphasis areas lie within 1 mile of the proposed project.

Bald Eagle

Status and Distribution

The bald eagle is currently listed as a threatened species under the Endangered Species Act. Historically, bald eagles inhabited most of the continental United States. However, by the mid-twentieth century, they were limited to a few isolated areas such as the Pacific Northwest, the Great Lakes states, and Florida.

Species and Habitat Description

In the Pacific Northwest, bald eagle populations include local nesting birds and wintering birds. Bald eagles typically breed between January 1 and August 15 in Washington state (Anthony et al. 1982). Wintering bald eagles congregate along Washington rivers between October 31 and March 15 to feed on stranded, spawned-out salmon. Wide, braided river reaches with numerous gravel bars are the optimal areas for feeding because the gravel bars catch and retain salmon carcasses and provide the eagles with unrestricted flight paths. Diurnal feeding perches selected by eagles tend to be the highest perch site overlooking a good food source. Nocturnal communal perches, on the other hand, tend to be in mature conifer stands that offer protection from cold and inclement weather.

Species Occurrence in the Project Corridor

Bald eagle nests have not been documented in the project corridor. The closest documented nest is located on the west side of Wynoochee Lake north of the project corridor. Although there are a few large stream valleys along the corridor (Anderson, Save, and Schafer creeks), they are within relatively steep ravines within 0.25 miles of the project corridor and they provide only marginal habitat for bald eagle compared to the floodplains of the Wynoochee River, where open foraging habitat in the river is available. Therefore, while bald eagles may perch or fly over the project corridor, they are unlikely to use the habitat for nesting, foraging, and roosting. According to the Olympic National Forest wildlife biologist for the Hood River district, no sites for wintering bald eagles may be present in the vicinity of the project corridor (Marable 2004).

Critical Habitat

There is no designated critical habitat for bald eagle.

Essential Fish Habitat

Because coho and coho habitat are present in project corridor streams, essential fish habitat, as defined by Pacific Fishery Management Council (PFMC), is present.

The PFMC, with the concurrence of the Secretary of the Department of Commerce, defines *essential fish habitat* (EFH) for freshwater salmon as “the aquatic component of streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to chinook, coho, or Puget Sound pink salmon (*O. gorbuscha*) (except above certain impassable barriers) in Washington, Oregon, Idaho, and California identified by USGS [U.S. Geological Survey] hydrologic units” (PFMC 1999). This includes the waters and benthos necessary to a species’ spawning, breeding, feeding, or growth to maturity.

The Magnuson-Stevens Fishery Conservation and Management Act (as amended through October 11, 1996) includes a mandate that the NOAA Fisheries identify essential fish habitat for federally managed marine fishes. The mandate also requires federal agencies to consult with NOAA Fisheries regarding all activities or proposed activities that are authorized, funded, or undertaken by the agency that may adversely affect essential fish habitat.

There are 83 marine species managed by NOAA Fisheries for which essential fish habitat is considered, including chinook, coho, and chum salmon stocks in Washington, Oregon, Idaho, and California, as well as pink salmon stocks of Puget Sound (PFMC 1999).

Land Use

The Camp Grisdale project corridor is located in an area used primarily for timber production and recreation. Land cover within the project corridor is primarily coniferous forest land (69 percent), with areas of recent clear-cuts (within the last 5 years) (15 percent), mixed coniferous (11 percent), and deciduous forest (5 percent).

The corridor has no adjacent residences or active permanent commercial operations. There is an abandoned logging facility, Camp Grisdale, for which the road is named. It is located adjacent to the road right-of-way, on the east side of the road, from milepost 15 to 15.8. The abandoned camp site extends from the Camp Grisdale Road right-of-way to the toe of the slopes located to the east, for a distance of approximately 2,000 feet. There is one privately owned rural property located approximately 0.25 to 0.5 miles west of the southern tip of the project corridor (on the Wynoochee River floodplain). Access to this property is from the Wynoochee Valley Road. Approximately 90 percent of the project corridor is owned by Green Diamond Resource Company, and the remaining 10 percent belongs to the Forest Service.

Types of recreational activities that are accessed by Camp Grisdale Road include fishing, hunting, hiking, boating, swimming, birding, picnicking, educational trips, and camping. There is a day use area and a campsite north of the Wynoochee Lake dam, both providing public access

to Wynoochee Lake, which was formed above the dam.

The Wynoochee Lake dam, operated by Tacoma Power and Light, contains turbines that produce electricity. The electric power production facility has a full-time manager who lives in a building located at the Wynoochee Lake day use area.

The area immediately south of the Camp Grisdale Road project corridor is residential and agricultural. The residents primarily manage farms along the road.

Land Use Plans

There are two land use plans affecting the Camp Grisdale project corridor. Private lands are currently regulated by Title 17 zoning of the Grays Harbor County Comprehensive Zoning Ordinance (Grays Harbor 2003). The Grays Harbor County Comprehensive Plan, written in 1962, is currently being updated and is not yet available for public review (Shea 2005). Areas of the project corridor located in the Olympic National Forest are managed under the Northwest Forest Plan.

The project also must be consistent with the Coastal Zone Management Act because it is located in Grays Harbor County, which is designated as coastal zone.

Grays Harbor County Comprehensive Zoning Ordinance

All nonfederal lands in the project corridor are located in the General 2 (G2) zoning district, which is a general development zone classification that permits a wide range of uses. The minimum lot size is 5 acres, or 1/128th of a section, and one dwelling unit per lot is allowed in the G2 district.

The following other uses or activities are permitted within the G2 district:

- Agricultural uses and associated uses of a rural nature including road-side stands for the sale of agricultural products, the majority of which are locally grown
- Public and semipublic uses, including schools, churches, museums and cemeteries
- The growing and harvesting of forest products, silviculture uses and associated uses of a rural nature
- Surface excavations regulated under Grays Harbor County Comprehensive Zoning Ordinance Sections 17.60.090 through 17.60.180
- Dams, electric power plants, flowage areas, transmission lines and stations

together with necessary accessory buildings

- Game and fish rearing and management
- Riding academies
- Parking, repairing, maintaining one heavy truck as an accessory use to a residence where the person operating the truck resides on the property where the truck is to be parked
- Temporary fireworks stands regulated under Chapter 70.77 of the Revised Code of Washington (RCW) and the Washington Administrative Code (WAC) 122-17
- Home day care facilities
- Public and semipublic parks, including sports fields.

Northwest Forest Plan

Olympic National Forest has an area of approximately 632,300 acres. Under the Northwest Forest Plan, federal land that is in the project area falls into three principal categories. These are described below.

1. *Congressionally withdrawn areas* include the forest's five wildernesses and the Quinault research natural area, with a total area of about 89,900 acres.
2. *Late successional reserves.* The Northwest Forest Plan provides a network of late successional reserves to maintain late successional and old-growth species habitat within ecosystems on federal lands for the long-term viability of affiliated species. Portions of the Camp Grisdale Road study area are located within the Quinault late successional reserve (Quinault North–RW 102 and Quinault South–RW 103) in the Quinault Ranger District, Olympic National Forest. This is part of a larger network of late successional forest, including the adjacent Olympic National Park Colonel Bob Wilderness, Quinault recreation area, Quinault research natural area, and Hood Canal South late successional reserve).
3. The *adaptive management area* (AMA): The remainder of the forest is included in the Olympic adaptive management area, which is used to develop and test management approaches that meet ecological, economic, and social objectives. The Olympic adaptive management area totals about 125,000 acres. Approximately 51,000 acres of the Olympic adaptive management area is available for conducting these ecosystem

management experiments. The probable timber sale quantity is estimated to be between 8 to 10 million board feet annually.

Approximately 65,000 acres is designated riparian reserves to maintain suitable habitat for fish. Northwest Forest Plan administrative withdrawals (2,000 acres) and areas unsuitable for timber production (7,000 acres) make up the balance.

Consistency with Northwest Forest Plan

The Northwest Forest Plan provides guidelines for the Forest Highway Program, which requires data collection and impact analysis of plants and animals protected by the plan. As part of the Northwest Forest Plan guidelines for natural area protection, compliance with the following aquatic conservation strategy objectives (ACSOs) is required.

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.
2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.
3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.
4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.
5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.
6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.
7. Maintain and restore the timing, variability, and duration of floodplain

inundation and water table elevation in meadows and wetlands.

8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.
9. Maintain and restore habitat to support well-distributed populations of riparian-dependent native plant, invertebrate, and vertebrate species.

The proposed project, with mitigation measures designed to comply with the aquatic conservation strategy objectives.

Coastal Zone Management Act

The Federal Coastal Zone Management Act (CZMA) requires that Federal agency activities that affect coastal zone land uses, water uses, or natural resources must be consistent with Washington's Coastal Zone Management Program.

Washington's coastal zone is comprised of the 15 counties that border on saltwater shorelines. Grays Harbor County is one of the counties.

The requirements of the CZMA apply whether the activities or developments are within or outside the shoreline zone. The process of determining whether a federal agency action is consistent with Washington's Coastal Zone Management Program is determined through a combination of federal and state regulations. The Washington Department of Ecology is designated as the state agency with responsibility for deciding whether federal actions are consistent.

Federal agencies that determine that a project, activity or action may affect coastal resources are required to make a determination of the consistency of the proposal with the State's program and submit it to the Washington Department of Ecology. The nature of the action then determines how the proposal is reviewed for consistency.

Camp Grisdale Road is approximately 20 miles from the nearest coastal shoreline. Wynoochee River flows into the Chehalis River that flows into Grays Harbor at Hoquiam.

Socioeconomics

The project setting is rural and contains very limited business or service activities. Camp Grisdale Road is an unpaved road bordered by public and private forest lands. The existing road provides access to over 100,000 acres of forest, including extensive timber acreage, recreational

areas, Wynoochee Lake, and the Wynoochee River Project (operated by Tacoma Power). The road primarily serves logging trucks and recreational vehicles during the months of May to September. The only commercial business established along the project corridor is the Green Diamond Resource Company, a Seattle-based timber company, formerly the Simpson Timber Company. Other businesses and services are located outside the project corridor in the nearby incorporated communities.

The cities of Cosmopolis, Aberdeen, and Hoquiam form the commercial and industrial core of Grays Harbor County. Although the timber industry has declined, logging and lumber product manufacturing remain an important economic factor in this area. In the vicinity of Montesano, resource-based industries such as forestry, agriculture, and gravel mining are important to the local economy. Montesano, the Grays Harbor County seat, is surrounded by small farming communities. Montesano residents also have employment in government, transportation, construction, manufacturing, trade, and services.

The population in Grays Harbor County in the vicinity of the Camp Grisdale Road project (census tract 4, census block 5) is 2,721 (consisting of 2,031 rural residents and 690 residents in urban clusters) (US Census 2000). The nearest town is Montesano (population 3,312), located approximately 17 miles south of the project corridor. Aberdeen, which is approximately 15 miles southwest of Montesano, has a population of 16,461. Almost half of Grays Harbor County residents live in the contiguous cities of Cosmopolis, Aberdeen, and Hoquiam (U.S. Census 2000).

The project corridor is unpopulated. Three residences are located just beyond the north terminus of the project at Wynoochee Lake. These dwellings provide housing for Tacoma Power employees at the Wynoochee River Project. South of the Camp Grisdale Road project terminus, farms and residences border Wynoochee Valley Road (Grays Harbor County Road 51190). Many of these residents are employed in the Aberdeen/Hoquiam area or other small urban areas nearby. Housing vacancy rates in Grays Harbor County range from 8.2 percent for seasonal, recreational, and occasional-use housing units to 12.5 percent for rental housing units (US Census 2000).

Environmental Justice

Environmental justice addresses issues related to potential disproportionate impacts of a project on low-income or minority populations. Published data are consulted to determine the presence of low-income residents and racial and ethnic minorities in the study area, and efforts are made to determine whether the proposed project would have a disproportionate impact on members of these groups.

Federal projects and projects that require federal action must comply with Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority and Low-Income Populations), Title VI of the Civil Rights Act of 1964, and many other laws, regulations, and policies regarding equal rights, equal protection, and nondiscrimination.

The socioeconomics study area for the Camp Grisdale Road project is defined as Grays Harbor County, census tract 4, census block 5. Based on data from the 2000 US Census, this area has a population of 2,748. Of this total, 2,617 residents (95.2 percent) are white, and 131 residents (4.8 percent) belong to racial minorities. American Indian and Alaska natives comprise the largest racial minority within the study area, with a population of 99; and 11 native Hawaiian or Pacific Islanders also reside within the study area. In the 2000 census, 21 people in the study area identified themselves as belonging to two or more races. No African American persons resided within the study area at the time of the most recent census.

According to the US Census Bureau, a linguistically isolated household is one in which all members 14 years old or more have at least some difficulty with English. Of the 2,748 residents within the study area, none identify themselves as Hispanic or Latino. However, 31 households (2.9 percent) use Spanish as their primary language within the home, and 12 of these households (1.1 percent) are linguistically isolated. Eleven households speak primarily an Asian or Pacific Island language within the home, but none is linguistically isolated.

The poverty rate within the study area is 8.3 percent, lower than the 10.1 percent poverty rate for Grays Harbor County. Of the 2,737 responses to this question in the 2000 census, a total of 228 people stated that their income was below the federal poverty threshold. In contrast, 2,186 residents of the study area (79.9 percent) listed their income as greater than twice the federal poverty level. The remaining 11.8 percent of the population listed incomes above the poverty line, but less than twice the threshold amount.

These statistics indicate that the population of the study area includes members of racial and ethnic minority groups, as well as people living below the poverty threshold, but that there are few residents of the study area within these groups.

There are no residents within the project corridor. Personnel who operate the Wynoochee Lake dam live in facilities located north of the project limits.

Public Services and Utilities

Public services provided in the study area include fire suppression, emergency medical services, police protection, parks, recreational facilities, and maintenance of public infrastructure, including roads. There are no schools, airports, or religious facilities in the study area, and no health care or mail delivery services are provided. Each of the public services provided in the study area is discussed below.

Three Tacoma Power vaults associated with the Wynoochee River Project are located adjacent to the road near the northern terminus of the project corridor. Utilities also include power lines that run along FDR 2294 to FR 22 to FDR 2370. No additional utilities are located along the remainder of the project corridor, and none are proposed.

Police services in the project corridor are provided by the Washington State Patrol detachment in Hoquiam or the Grays Harbor County Sheriff's Department headquartered in Montesano.

Snow is removed on Camp Grisdale Road by Tacoma Power, to enable staff members to transport juvenile salmon around the dam during snow events. Green Diamond Resource Company provides road maintenance services during the remainder of the year.

Most parks and recreational facilities in the project vicinity are owned and maintained by the Olympic National Forest. The most popular facilities in the area are the Tacoma Power day use area at the Wynoochee River Project, and the Forest Service's Coho Campground.

Archaeological and Cultural Resources

Historic properties eligible for or included on the National Register of Historic Places are protected under Section 106 of the Historic Preservation Act and Section 4(f) of the 1966 Department of Transportation Act. Tribal cultural resources are protected under Section 106 and are also subject to the Native American Graves Protection and Repatriation Act and the Archaeological Resources Protection Act.

Historic resource is a property or cultural resource listed in or eligible for listing in the National Register of Historic Places and may include buildings, structures, objects, sites, archaeological resources (greater than 50 years old) or traditional cultural properties. A *traditional cultural property* is a property that is eligible for inclusion in the National Register of Historic Places because of its association with cultural practices or beliefs of a living community that 1) are rooted in that community's history, and 2) are important in maintaining the continuing cultural identity of the community. A *cultural resource* is an all-inclusive term referring to objects, sites, places, institutions, values, beliefs, customs, traditions, symbols, and social structures that have cultural value to some sociocultural group.

Study Methods

A cultural resources investigation was performed in August 2004 and is presented in *Cultural Resources Investigations for the Camp Grisdale Road Project, Grays Harbor County, Short Report 817* (AHS 2004). Information from that report is summarized below. The objective of this study is to comply with Section 106 of the National Historic Preservation Act of 1966, as amended, through the location and preliminary characterization of both previously identified and as yet unidentified cultural resources within the area of potential effect (APE). Cultural resource tasks performed included a site file search at the Washington State Office of Archaeology and Historic Preservation (OAHP) in Olympia; inspection of General Land Office records maintained at the Spokane Office of the Bureau of Land Management; a visit to the Forest Service office in Olympia; a visit to the Mason County Historical Museum located in Shelton; inspection of maps from the Kroll Map Company; a cultural resources survey (including shovel testing) of the APE; consultation with the Skokomish Tribal Historic Preservation Officer; and a literature review. The cultural resources report (AHS 2004) was provided to the state historic

preservation office (SHPO) in late 2004 for review.

The project area is within the Olympic physiographic province, which consists of the Olympic peninsula bounded by Puget Sound to the east, the Straits of Juan de Fuca to the north, the Pacific Ocean to the west, and the Chehalis River to the east (Thornbury 1965). The project APE consists of the Camp Grisdale Road right-of-way (17.5 miles long and 100 feet wide), plus the two major curve realignment areas. The entire APE totals approximately 214 acres.

The project area was extended by 1,000 feet south of the southern terminus of the project area defined in 2004. An additional cultural resources investigation of this extension area performed in May 2005 is presented in *Federal Highway Administration, Western Federal Lands Highway Division, Historic Property Inventory Report, Wynoochee/Camp Grisdale Road Improvement Tie-In, Supplemental Cultural Resources Report* (AHS 2005).

Ethnographic and Historic Background

In the early nineteenth century, the people occupying the Wynoochee Valley referred to themselves in reference to politically independent village names (e.g., Wynoochee) and grouped themselves and neighbors in more distant villages together under generic names (Hajda 1990). Wynoochee Valley inhabitants centered on a major salmon stream, and fishing, hunting, and gathering activities provided all subsistence requirements.

Early development and settlement of the project area is documented in a series of General Land Office township surveys from 1884 to 1905. The logging industry of the Wynoochee Valley dates to the late 1880s when teams of oxen skidded immense logs from the forests (Van Syckle 1980). The introduction of steam donkeys and logging railroads quickly followed late in the nineteenth century (Van Syckle 1980). A section of logging railroad last owned and operated by the Green Diamond Resource Company (formerly the Simpson Timber Company and the Simpson Logging Company) is present in proximity to portions of the Camp Grisdale Road. This line is discussed in greater detail in the Study Results section below. Since the 1880s, approximately 300 logging companies have operated in Grays Harbor County (Van Syckle 1980).

In 1946, the Simpson Logging Company (now the Green Diamond Resource Company) signed a contract entering into the 100-year Shelton cooperative sustained yield unit (CSYU) agreement with the Forest Service (Rooney 1997). Although the Camp Grisdale Road project corridor is located within the 270,000-acre cooperative sustained yield unit, the 100-year agreement between Simpson Timber Company and the Forest Service was terminated in 2002, 44 years short of its originally conceived end date.

The timber that the cooperative sustained yield unit agreement guaranteed to the Simpson Logging Company (now the Green Diamond Resource Company) prompted it to construct the Camp Grisdale residential logging camp in 1946 adjacent to its logging railroad tracks (James 1986). Camp Grisdale closed in 1985, and shortly thereafter the northern section of the Simpson logging railroad was abandoned at a point about 10.25 miles south of Camp Grisdale.

From the time of the first commercial logging, timber harvest in the Wynoochee Valley has followed the typical pattern of building transient camps and facilities that are dismantled or abandoned as soon as the timber is cut. Logging facilities such as camps and railroads therefore have life spans that change with the available timber resources and land use policy conducive to its exploitation.

Camp Grisdale is more than 400 feet from the road and is not located within the APE.

Study Results

One historic archaeological site within the APE was recorded as a result of the survey and shovel testing. Fragments of automobile windshield glass and plastic sheeting, all modern debris, were the only cultural materials recovered from two of the 12 shovel tests.

The archaeological site is the abandoned Simpson Timber Company (now Green Diamond Resource Company) logging railroad roadbed. Five segments of the railroad roadbed were recorded during the survey. Segments 2 through 5 of this railroad roadbed are adjacent to the project APE. Segment 1, which is at the northern end of the FR 22 portion of the project corridor, extends slightly into the APE.

By 1928 the railroad had been constructed as far as Section 30, Township 21 North, Range 7 West (Kroll Map Company 1928:16). Between 1928 and 1955 (USGS 1955) the railroad was extended approximately 10 miles to its northern terminus in Section 27, Township 22 North, Range 7 West. By 1987 the entire railroad segment north of Simpson Timber's transfer point in the northwest quarter of Section 17, Township 20 North, Range 7 West was abandoned. The rails, ties, and any associated features in those segments adjacent to the Camp Grisdale Road APE have been removed.

Today portions of the railroad roadbed are still used by logging and gravel trucks. Other segments are overgrown with shrubs and trees and at least one segment adjacent to the Camp Grisdale Road APE is used as a waste rock dump. Dump truck loads of gravel have been dumped on this section of the roadbed.

The results of the supplemental investigation for the 1,000-foot extension of the project area indicated no prehistoric cultural materials present in this area.

Cultural Resources in Project Area of Potential Effect Eligible for National Register of Historic Places

None of the identified cultural resources within the APE is eligible for listing in the National Register of Historic Places. The abandoned and demolished Simpson logging railroad roadbed is one of dozens of logging railroads in the southern Olympic Peninsula river valleys. The Simpson railroad lacks distinctive architectural design characteristics and physical integrity. As an historic archaeological site, the Simpson railroad does not have the potential to yield information important to history. The Simpson railroad roadbed is not eligible for listing in the

National Register.

The Shelton cooperative sustained yield unit is not a cultural resource, no longer exists, and is not eligible for listing in the National Register.

No National Register-eligible cultural resources are present in the project APE. The Washington Office of Archeology and Historic Preservation has concurred with the findings of both the 2004 and 2005 studies of the project area and the project extension area, respectively.

Cultural Resources in Project Area Eligible for National Register of Historic Places

No other cultural resources immediately adjacent to the APE are potentially eligible for the National Register, and the APE is in areas of low to moderate prehistoric site probability.

Traditional Cultural Properties

No information concerning traditional cultural properties in or near the project area of potential impact was located during a search of records at the state Office of Archaeology and Historic Preservation, Olympia. The Skokomish Tribe did not express any cultural resources concerns with the project (Miller 2004).

Previously Documented Sites

Within the Project Area

In 1974 the Shelton cooperative sustained yield unit was inventoried as the Simpson sustained yield unit (Ficken 1974) and was issued cultural site designation 14-01492 by the state Office of Archaeology and Historic Preservation. The Camp Grisdale Road APE is entirely within the boundaries of the 270,000-acre cooperative sustained yield unit. The cooperative sustained yield unit existed by virtue of a contract, now terminated, between Simpson Logging Company and the Forest Service. Hence the cooperative sustained yield unit no longer exists as a legal agreement or as a timber harvest and management program, and it is not a cultural resource.

Project Vicinity

Documented cultural sites were recorded within the project vicinity, but outside the APE. Recorded in 1983, site FS 9 consists of the completely deteriorated remains of two and possibly three wooden structures and associated domestic artifacts (Notenboom and Willits 1983). The site is located west of the Wynoochee River, about 2 miles from the Camp Grisdale Road APE. The documentation was forwarded to the state historic preservation office (SHPO) with the recommendation that the site was eligible for listing in the National Register. The SHPO did not agree; consequently the site is not included in the NRHP (Notenboom and Willits 1983).

In 1982 a segment of a trail dating to circa 1917 was recorded as site FS 13, the Old Wynoochee Trail. Joe Kestner, the first Wynoochee Forest Service guard, built parts of the trail in 1917 for fire prevention and recreation purposes (Willits 1982). Timber harvest and road construction had

truncated the trail and only a short segment was documented. The site lies about 21.5 miles west of the Camp Grisdale Road APE. The SHPO concurred with the recommendation that the site was not eligible for listing in the National Register (Willits 1982).

Scenery and Aesthetics

The project corridor lies on a plateau above the Wynoochee River, in the Chehalis River basin of central Grays Harbor County in a forested landscape. The study area includes scenic views of the forest as Camp Grisdale Road climbs in elevation from 490 feet at the southern terminus of the project corridor to 720 feet at its northern terminus. Camp Grisdale Road lies in a mixed coniferous forest where Douglas-fir is the dominant tree species.

The visual character of the project vicinity is determined by the relatively flat nature of the landscape, with some rolling hills, generally dense vegetation, and a generally low level of human activity and associated structures. The corridor consists of two broad visual environments: a distant environment away from the roadway, and a roadside environment. The distant environment is characterized by the absence of manmade structures and a lack of corresponding geometric visual elements. Evidence of past timber operations is visible at a distance in a patchwork pattern of cut areas of varying ages.

The environment adjacent to the roadway shares most of the visual characteristics of the distant environment, having very few structures or other geometric elements that contrast with the vegetated surroundings. The existing roadway is flat, with several sharp curves. The structures and geometric elements in the roadside environment include the roadway surface itself (two traffic lanes with an unpaved gravel surface), culverts, signs, and bridges. Views from points along and adjacent to the roadway are dominated by the condition of the nearby forest. Evidence of current and past logging adjacent to the roadway is visible in a patchwork of cut areas of varying ages. Openings in the tree canopy and varying ages of tree stands in the surrounding forest allow for occasional views of surrounding hillsides. Green and brown are the dominant colors, and the remaining forest patches and logged areas create a complex, strongly contrasting visual interplay of light and shadow. The existing roadway forms a grayish, horizontal, planar visual element that contrasts with its varied surroundings.

Recreation

The northern segment of the project corridor lies within the Olympic National Forest, which covers 632,300 acres of land in western Washington. The Olympic National Forest provides a variety of recreational opportunities, including camping, picnicking, hiking, swimming, horseback riding, fishing, hunting, auto touring, backpacking, boating, and watching wildlife.

Camp Grisdale Road is the most direct access to over 100,000 acres of forest, including 50,480 acres in the Wynoochee Lake recreation area.

The primary recreational setting in the project vicinity is the Wynoochee Lake area, which includes the Coho and Chetwood campgrounds and Tacoma Power's Wynoochee River Project. Camp Grisdale Road provides access to the Coho and Chetwood campgrounds. No commercial services are available in the Wynoochee Lake area.

Coho and Chetwood Campgrounds

Coho Campground, operated by the Forest Service, is located approximately 0.5 miles north of the northern end of the project corridor on FDR 2294. Located on the western shore of Wynoochee Lake, the campground is shaded by large conifers and other evergreen trees. The road through the campground is paved, and visitor use of the campground is heavy during the summer months. Facilities at the campground include trailer and tent camping, drinking water, flush toilets, picnic areas, hiking trails, and fishing. The campground includes 58 campsites (46 drive-in, single-family campsites, 10 walk-in campsites, and two overflow campsites).

One of the walk-in campsites accommodates a group of 12 persons. A public telephone is available at the entrance to the Tacoma Power day use area. A waste dump station for recreational vehicles is located just outside the campground on FDR 2294. There is a public boat ramp and access to hiking trails.

Coho Campground is open from spring through fall. The campground is used to capacity on summer weekends beginning in mid-July (Moswser 2004a). Tacoma Power's Wynoochee River Project day use area receives illegal overflow parking from the campground on summer weekends (Mazur 2004a). During the week, an average of approximately 18 campsites are occupied. Campground hosts report that most visitors are local residents.

Day use of the boat ramp is heavy on weekends during the summer. According to campground hosts, the day use parking area fills, and visitors park along the side of the road, disregarding the no-parking signs.

The Forest Service also operates the secluded Chetwood Campground, located 1 mile north of the Tacoma Power administration building on the western shore of Wynoochee Lake. Chetwood Campground, which can be reached only on foot or by boat, has 10 primitive campsites. No fees are charged for camping, but a trail park pass is required for parking at the trailhead. The nearest parking area is 0.5 miles north of Coho Campground. Visitor use information is not available for the Chetwood Campground.

Tacoma Power's Wynoochee River Project

The Wynoochee River Project area offers recreational opportunities for visitors. Tacoma Power developed the Wynoochee River Project by refitting the U.S. Army Corps of Engineers' Wynoochee River dam. The U.S. Army Corps of Engineers (USACE) built the dam in 1972 to provide flood control, industrial water storage for the City of Aberdeen, water for irrigation, and water to support the river's fishery. The dam is owned by the City of Aberdeen.

Tacoma Power built a powerhouse about 0.25 miles downstream of the dam. The powerhouse began generating electricity in 1994 and produces about 30 million kilowatt-hours of electricity each year, enough to serve 2,100 residences.

Wynoochee Lake, the 1,140-acre reservoir impounded by the Wynoochee Lake dam, offers swimming, fishing, and boating opportunities.

Downstream of the dam on the west bank of the Wynoochee River, there is a viewing area with interpretive exhibits where visitors can see the dam structure and the river gorge. An area on the western shore of the lake near the project administration building is available for picnicking and swimming.

Approximately 7,825 persons visited the day use area in 2001, and approximately 10,783 visited in 2003 (Tacoma Power 2004). Through July 2004 approximately half as many visitors used the day use area than through July 2003. This could be due to factors such as higher gasoline prices, road construction on Wynoochee Valley Road, high fire danger, and low lake levels (Mazur 2004b). There were no large group activities in 2004, such as company picnics, that increase the visitor load (Mazur 2004b).

Hiking Opportunities

Two trails are accessible to visitors to the campgrounds and the Wynoochee River Project area. The Wynoochee Lake Shore Trail is a 16-mile hiking and mountain biking trail that winds through the forest around the lake. The Forest Service rebuilt the trail and added a 1-mile extension in 2000. The trail around the lake is not maintained, and bicyclists must carry their bicycles over approximately 50 downed trees. The 0.25-mile Working Forest Nature Trail, which educates visitors about the forest environment, begins at Coho Campground, loop B.

Air Quality

The U.S. Environmental Protection Agency (U.S. EPA), the Washington Department of Ecology (Ecology), and the Olympic Region Clean Air Agency (ORCAA) regulate pollutants in outdoor air and contaminant emissions from air pollution sources. The U.S. EPA standards are generally used to determine limits for pollutant concentration levels unless local standards are more stringent. The Camp Grisdale Road improvement project would comply with U.S. EPA standards.

When the wind is from the west, southwest, or northwest, which is typical onshore flow for Grays Harbor area, the air quality forecast and conditions would be expected to be in the good air quality range. Air quality is expected to be in the good range most of the time with a few moderate days during the late fall and winter months during times when offshore flow and a temperature inversion is present with high woodstove use and outdoor burning (from forestry, residential, and land clearing activities). Within the project corridor, the unpaved road generates

dust that increases with traffic levels, particularly in the dryer summer months.

ORCAA currently monitors only in Aberdeen for inhalable particulate matter (PM₁₀ and PM_{2.5}, particulates no larger than 10 microns and 2.5 microns, respectively). The ORCAA (2004a) air quality index summary of PM_{2.5} for 2003 reports 351 days with good air quality and 14 days with moderate air quality. In a 1997–1998 study of PM₁₀ and sulfur dioxide levels in Aberdeen, Hoquiam, and Cosmopolis, no exceedances of the national ambient air quality standards for these pollutants were reported (ORCAA 2004b).

Key elements of the 1990 Clean Air Act Amendments include defining nonattainment areas, controlling hazardous pollutants at the source, reducing acid rain, requiring air quality permits and annual reporting for industrial polluters, and instituting automobile emission standards. *Nonattainment* is the term applied to areas where concentrations of pollutants exceed public health and environmental safety standards. The Camp Grisdale Road study area is not listed among the U.S. EPA nonattainment areas for criteria pollutants (U.S. EPA 2004).

Noise

The Camp Grisdale Road study area is predominantly actively harvested forest land. The primary source of noise within the study area is automobile and truck traffic from Grisdale Road or from timber harvesting activities on the adjacent forest lands. Washington Department of Transportation (WSDOT) traffic noise analysis and abatement policy and procedures provide guidance for the analysis and abatement of highway traffic noise.

Traffic noise levels within the rural project area are currently low to moderate. The greatest noise levels are associated with vehicle traffic and timber harvest activities when heavy machinery and trucks are in use.

Grisdale Road would remain a two-lane roadway in substantially the same location. Potential noise-sensitive receptors in the project area include recreational users of the Olympic National Forest and visitors to Wynoochee Lake. Potential noise receiving sites are the Wynoochee Lake picnic area located approximately 1,200 feet from the project corridor, the boat ramp located at Wynoochee Lake (2,500 feet) and the south end campground (1,600 feet). Implementation of the proposed road alignments would not move traffic closer to any receivers. The birds and mammals that are noise-sensitive species are discussed in the wildlife section.

Hazardous Materials

Facilities or properties that have released hazardous materials to the environment, or that manage hazardous materials in large quantities, are required to report these activities to both federal and state regulatory agencies. The potential for hazardous materials impacts was evaluated by first reviewing current regulatory databases maintained by these oversight agencies. Sites identified

by the U.S. EPA or the Washington Department of Ecology located within the study area were documented and classified according to the activity indicated. Regulatory databases were searched for facilities located along the project corridor with documented releases or that manage hazardous materials in large quantities to determine if a potential to affect public health and safety in relation to the Camp Grisdale Road project improvements was of concern.

Historical information also was reviewed for the project area to identify activities that may have impacts on soil and ground water. Historical records were reviewed from the following standard sources:

- Historical photographs and books covering logging camps
- Historical parcel maps
- County directories
- County files.

A site reconnaissance provided verification of the project corridor conditions and firsthand knowledge of site settings, including the surrounding environs. A more detailed discussion of the hazardous materials investigation, relevant laws and regulations, site categories, and methodology is provided in Appendix F.

Known and Potential Hazardous Materials Sites

This section summarizes the sites located within 500 feet of the project corridor identified as either reportedly having, or with a potential for, a release of hazardous materials to the environment.

Tacoma Power Wynoochee River Dam Facility

The Tacoma Power Wynoochee River dam facility, located approximately 500 feet north of the northern limit of the project corridor (Figure 4-8), is listed in the Washington Department of Ecology's leaking underground storage tank (LUST) and registered underground storage tank (UST) databases, as well as the U.S. EPA Resource Conservation and Recovery Act (RCRA) database, as a conditionally exempt small-quantity generator (SQG) of hazardous waste.

The reported release associated with leaking underground storage tanks was limited to soil and has been cleaned up, and no release or violation has been reported associated with the hazardous waste generator designation. For these reasons and because of the distance from the study area, this facility is not considered an environmental concern for the project corridor.

Former Simpson Timber Company Lumber Processing Plant

The former Simpson Timber Company (currently the Green Diamond Resource Company) lumber processing plant, located along the project corridor at the south end of Camp Grisdale (Figure 4-8), is listed in the RCRA database as a hazardous waste generator. No information is available whether this facility is a large quantity or small quantity generator; however, no release

or violations were reported and it is not considered an environmental concern for the project corridor.

Camp Grisdale

Historical information shows that heating oil was used throughout the former company town, indicating a potential for use of underground storage tanks to store the oil. Tanks associated with a gasoline station connected to the former mercantile store also may have existed. No site assessments were conducted, and no records exist indicating whether a release of petroleum products has occurred or whether tanks were removed. Residual petroleum hydrocarbon contamination in soil and ground water as a result of spills or leaks from underground storage tanks may potentially affect soil and ground water quality adjacent to the project corridor.

Two empty and rusted 55-gallon drums, each labeled “Shell Tellus Oil” (a hydraulic oil), along with about three empty and rusted steel drums scattered among metal culvert sections, were observed on the ground surface within 300 feet east of the project corridor and Camp Grisdale during site reconnaissance. One of the empty steel drums appeared to have been used as a burn barrel by campers or hunters, based on the charred wood observed inside the drum. No substantial areas of stained soils on the ground surface surrounding any of the drums were identified.

Based upon visual inspection, no visibly stained surfaces or other evidence of contamination indicating disposal of hazardous substances, illegal dumping, improper use or storage of hazardous materials or other evidence of contamination along either side of the project corridor that would negatively impact the proposed road construction and improvements were identified.

Natural Resources and Energy

The source of aggregate rock to produce pavement has not yet been identified. Both grading and paving would use fossil fuel energy sources. Vehicular traffic and vehicles using the road during construction would also consume fossil fuel energy.

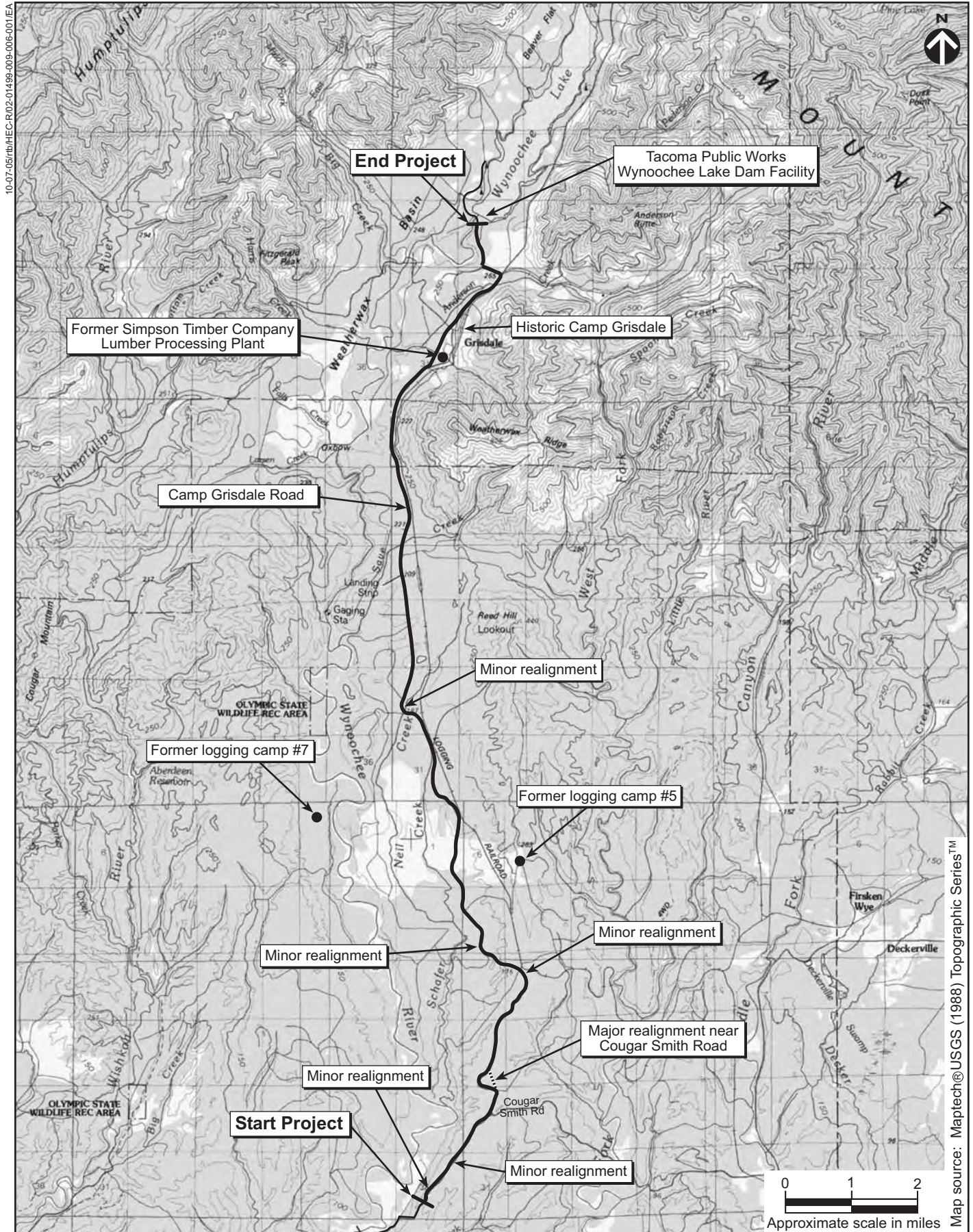


Figure 4-8. Former logging camps and hazardous materials sites in the Camp Grisdale Road study area.

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5.0 Impacts and Mitigation

This chapter discusses potential long-term operational impacts and mitigation for each environmental element. Construction-related impacts and mitigation measures are discussed separately at the end of this chapter, followed by a description of cumulative effects.

Geology and Soils

No-Action Alternative

As vehicles drive on the road, soil loss in airborne dust plumes would continue under the no-action alternative. New soils and gravel and regrading would continue to be needed to maintain the existing roadway. This would continue to increase the road width in some areas. Sediment and gravel loss from the roadway could clog some culverts and cause flooding or drainage problems during heavy winter rains.

There are a few areas where slopes adjacent to the existing roadway are unstable and landslides have occurred. Erosion of road fill slopes is expected to continue under the no-action alternative.

Preferred Alternative

Reconstruction and paving of Camp Grisdale Road would result in wider fill-slope areas along the existing roadway. Roadway slopes disturbed during construction would be recontoured to meet FHWA road construction criteria as shown in project plans, designed for the particular soil and topographical characteristics of the corridor. All disturbed soils would be revegetated with native or indigenous plant species to prevent erosion. The roadway design avoids disturbance to steep, unstable cut slopes on FR 2294.

The paved road would have less airborne sediment deposits to adjacent areas. Soil erosion of the existing roadway would be prevented after construction has been completed, although road shoulders would still be prone to erosion until revegetation stabilizes the soils.

No indirect effects to geology and soils are anticipated.

Mitigation Measures

The following mitigation measures will minimize the potential impacts on geology and soils:

- Best management practices (BMPs) would be implemented as appropriate following construction.
- The slopes would be rounded and contours graded as feasible to blend into the surrounding terrain.

Water Resources

No-Action Alternative

Continued sedimentation and gravel deposition in streams would occur under the no-action alternative. Continued sedimentation of streams and wetlands would continue to affect water quality.

Preferred Alternative

Gravel roads are considered impervious because of their compacted surfaces. Widening Camp Grisdale Road and paving would increase the existing impervious surface of the road by 17 percent. The improved roadway would decrease the sediment loading in adjacent streams due to the elimination of dust and there would be substantial reductions in surface erosion after the existing gravel surface is paved.

Many of the existing culverts are too small to convey flows. The proposed project would replace undersized culverts and those that are not fish-passable, where feasible.

Long term operational impacts are expected to result from the paving of Camp Grisdale Road. Currently, seasonal average daily traffic (SADT) is approximately 350 vehicles (including logging trucks, recreational vehicles, and cars towing boats or camp trailers), and the projected seasonal average daily traffic in 2019 is 500 vehicles (see the project description). Any increase in runoff pollutant load produced by the increase would be minor and would result in minor water quality impacts in streams crossed by Camp Grisdale Road. The increase would be offset by a reduction of airborne and waterborne sediment deposited in streams from the existing gravel road.

Mitigation Measures

The following mitigation measures would minimize adverse water quality impacts after construction of the improved road.

- The drainage system along Camp Grisdale Road would be improved to meet the applicable standards of the WSDOT (2004) *Highway Runoff Manual*.
- Roadside bioinfiltration swales would be constructed at the edge of the paved road, replacing the existing infiltration swales. Where feasible, infiltration swales would be directed to disperse stormwater to upland areas to allow infiltration of road runoff instead of direct discharge into streams and wetlands. Sheet flow dispersion would be used where feasible. Infiltration swales that have a slope greater than 4 percent would be rock-lined to reduce erosion and sedimentation of adjacent areas or water bodies. Rock lining would also aid infiltration of stormwater prior to discharge to water bodies.

- Culverts would be repaired or replaced to accommodate stormwater flows and to prevent debris clogging and avoid associated maintenance requirements. Eight large culverts would be replaced with fish-passable structures: seven fish-passable culverts and one bridge. Fish-passable culverts would be constructed at aquatic resources (ARs) 9, 11, 19, 27 (Neil Creek), 30a, 30b, and 48 (Anderson Creek). A bridge would replace the culvert at AR 25 (Schafer Creek). The designs of the replacement culverts and the bridge crossing would meet fish passage design standards of the Forest Service, the USFWS, and the Washington Department of Fish and Wildlife (WDFW).
- Stream crossings where soils are disturbed would be restored. All disturbed soils at stream crossings that are not part of the road would be restored to their original grade and revegetated with native plants.

Floodplains

Executive Order 11988 – Floodplain Management (1977) requires federal agencies to avoid—to the extent possible—the long- and short-term adverse impacts associated with occupancy and modification of floodplains, and to avoid direct and indirect support of development in floodplains wherever there is a practicable alternative (FEMA 2004a). In accomplishing this objective, “each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities” (FEMA 2004a), for the following actions:

- Acquiring, managing, and disposing of federal lands and facilities
- Providing federally undertaken, financed, or assisted construction and improvements
- Conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities (FEMA 2004a).

No-Action Alternative

Under the no-action alternative, the floodplain would remain in its current condition.

Preferred Alternative

The road currently crosses one floodplain at Neil Creek. The culverts at this location currently convey the 100-year flood flows adequately. The reconstructed road would remain on the existing alignment and a new culvert would be installed at this location. The new culvert would

transport water under the road and would not result in loss of flood storage capacity or obstruction of flood flows. The new culvert would be designed to convey the 100-year flood flows, and therefore no change in flooding of the floodplain is anticipated.

Mitigation Measures

Mitigation measures for impacts on floodplains are similar to those described in the water resources section, with the addition of the following mitigation measure:

- New culverts would be designed to allow water to flow under the road to maintain the existing hydrology of the floodplain and minimize the amount of fill in the floodplain.

Wetlands

No-Action Alternative

Under the no-action alternative, there would be no alteration of the existing wetlands within the project corridor.

Airborne sediments are most prevalent during the summer, when the roadway is dry. Up to 0.5-inch of dust accumulation was observed during the July survey in wetlands that adjoin the road. This dust completely covers trees, shrubs and herbaceous species, with physiological damage to plants and animals likely. Additionally, soil test pits revealed many years of such accumulation, with layers of dust sandwiching annual leaf fall. These sediments are several inches thick in some areas and often contain dust palliatives that are sprayed on the road to reduce dust. In addition, the frequent regrading and application of fresh gravel to the roadway results in ongoing incremental fill of adjacent wetlands. Some culverts are completely submerged under side-cast gravels. These receiving ditches also appear to be cleared and excavated on at least an annual basis. This condition would remain and dust sedimentation would continue.

Preferred Alternative

The paving of Camp Grisdale Road would result in long-term beneficial major reductions in the amount of sediment delivered to wetlands, their buffers, and upland areas throughout the project area.

The replacement of culverts throughout the project corridor would improve hydraulic connectivity through the project corridor and enhance lateral movement of wetland plants and wildlife which exploit wetland habitats.

Up to 2.0 acres of wetland could be disturbed. Of that total, approximately 0.6 acres would be

disturbed temporarily by excavation at culverts and 1.4 acres would be disturbed permanently. Impacts on individual wetlands are detailed in the biological resources report (Herrera 2005b) and wetland delineation report (Herrera 2005a). The total acreage to be impacted is a combination of small pieces of wetlands, mostly adjacent to the existing road. As such, the habitat value of the wetlands that would be disturbed is limited and of low quality. The adverse impacts to wetlands would be minor. The temporarily disturbed wetlands would be revegetated upon completion of construction. The wetlands permanently lost would be mitigated by creation of new wetland areas north and south of Neil Creek. After mitigation, in the long term, no net loss of wetlands would result and mitigation would result in one contiguous wetland rather than the smaller discontinuous pieces of wetlands.

Mitigation Measures

A conceptual wetland mitigation plan has been prepared for the Camp Grisdale Road improvement project. The overall wetland mitigation goal is to protect existing wetlands and provide compensation for wetland areas and functions lost as a result of the road improvements. Wetland mitigation would be achieved through a series of actions intended to reduce the total adverse impact on wetlands. These actions include impact avoidance, minimization, rectification, and compensation. Impact avoidance, rectification, and compensation are discussed below, and impact minimization is discussed under the construction impacts and mitigation section because it is more applicable to project construction than operation of the project.

Avoidance of Impacts

Most of the proposed footprint for the improved Camp Grisdale Road has been located within the existing roadway footprint and previously affected upland areas. Wherever possible, FHWA has modified the project design to avoid disturbance of wetlands. For example, the proposed road alignment at Neil Creek was realigned to avoid wetlands adjacent to the existing road. Proposed permanent wetland impacts have been reduced from 3.7 to about 1.4 acres through redesign. The road location was moved to skirt the delineated wetlands. Complete avoidance of impacts on wetlands in some locations in the project corridor is impossible because wetlands and streams abut both sides of the roadway along the project corridor. The widening of the roadway and the installation of new and replacement culverts would in many cases require placing fill in adjacent wetlands.

Mitigation

Mitigation for temporary and permanent impacts on wetlands and streams in the project corridor, the following measures are proposed:

- Removal of existing fill in the riparian areas would total approximately 0.1 acres.

- A wetland mitigation area would be constructed at the Neil Creek (AR 27) crossing and realignment area, including wetland creation within the existing roadway that would be abandoned north of the crossing and creation of wetlands in recently cleared areas south of the crossing. The mitigation area would total approximately 2.8 acres.
- Over 5 additional acres of existing wetland would be preserved adjacent to the creation area. Portions could be enhanced with vegetation plantings
- Restoration at the Schafer Creek (AR 25) crossing, including replacement of the existing culvert with a bridge, removal of previously placed fill within the roadway footprint, structural improvements to the stream, and revegetation of areas exposed during fill removal using locally native species. Removal of fill from the riparian area would total approximately 0.2 acres.

Finally, the proposed stormwater system for the road improvement project would greatly improve the current condition of streams and wetlands in the project corridor. Under existing conditions, stormwater is conveyed directly to streams and wetlands through direct runoff and conveyance through roadside ditches. The stormwater conveys large volumes of sediment from the gravel road to streams and wetlands. Airborne dust from the road is carried hundreds of feet into adjacent streams, wetlands, and forest. In addition, there is currently a direct discharge of gravel and fine sediments to streams and wetlands during regrading activities. The proposed project would collect roadway runoff in roadside ditches or sheetflow to uplands. Further, the proposed project would pave the roadway surface, thereby reducing settlement of dust on wetland vegetation.

Only Practicable Alternative Finding

The preferred alternative involves the improvement of existing roadway. As a result, opportunities to avoid wetlands that run along or cross the roadway are limited. Project alternatives and design concepts that involved other route corridors were considered, but eliminated earlier in the NEPA process due to greater environmental impacts with no added benefit. No impacts would occur under the no-action alternative, but the no-action alternative would not meet the purpose and need of the project.

Measures to Minimize Harm

To implement this goal of Executive Order 11990, fill in wetlands was minimized in the preliminary design and would be minimized to the extent possible during final design. The proposed alignment of the road avoided wetlands to the extent possible, but could not avoid all wetlands. Disturbance within wetlands would be limited to that necessary to construct the roadway. Creation of wetlands as described earlier would mitigate the loss of wetlands. Avoidance and mitigation measures include all practicable measures to minimize harm to wetlands.

Finding

Based upon the above considerations, it is determined that there is no practicable alternative to the proposed new construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use.

Vegetation

No-Action Alternative

Dust from the road would continue to cover roadside vegetation. Dust interferes with plant physiology and would be an adverse impact.

Forest Service and State Sensitive Species

Vascular Plants—No change in these species' distribution is anticipated as a result of the no-action alternative.

Bryophytes—The no-action alternative would not affect populations of sensitive bryophytes. The existing populations have persisted despite the dust distribution into their habitats or the populations of sensitive lichens.

Lichens—The no-action alternative would not indirectly affect populations of sensitive lichens. The existing population has persisted despite the copious dust distribution into its habitats.

Noxious Weeds

The no-action alternative would not appreciably alter the existing assemblage of noxious weed species. Four species—reed canarygrass, Himalayan blackberry, English holly, and evergreen blackberry—are likely to continue to spread in the absence of control efforts. Ongoing road side clearing, grading, and timber harvest adjacent to the project corridor would continue to provide exposed mineral soils and other disturbance features which support the establishment of noxious weeds.

Preferred Alternative

Paving provides the beneficial effect of reducing dust deposited on roadside vegetation. Vegetation would be cleared during construction. Approximately 23.5 acres of habitat (including 3.7 acres of clearcut) would be disturbed, and a portion of that would be permanently lost. The most high quality forest habitat for wildlife lost in realignment areas would include only 0.83 acre of mature (MOGC in Table 5-1) and 10.9 acres of second growth conifer forest. Vegetation clearing impacts on habitat is further discussed under the Wildlife section.

Forest Service and State Sensitive Species

Vascular Plants—No sensitive or listed vascular plant species were encountered in the project corridor. No change in these species' distribution is anticipated as a result of the ongoing operation of the proposed roadway improvement project.

Bryophytes—The proposed roadway improvements are likely to modestly improve overall bryophyte habitat by reducing the distribution of gravel dust into the habitats occupied by these species. No indirect effects are anticipated for the preferred alternative.

Lichens—The proposed roadway improvements are likely to modestly improve overall lichen habitat by reducing the distribution of gravel dust into the habitats occupied by these species. No indirect effects are anticipated for the preferred alternative.

Table 5-1. Potential acres of road construction clearing by habitat type in the Camp Grisdale Road project corridor.

Habitat Type	Description of Habitat Type	Percent of Habitat Type within Project Corridor ^a	Potential Disturbance by Habitat (acres)
CC	Recent clear-cut	14.9	3.7
MOGC	Mature old-growth conifer forest	9.1	0.8
OF	Open-field area with sporadic conifers	0.2	0.1
SGCL	Second-growth conifer forest	43.5	10.9
SGDL	Second-growth deciduous forest	1.3	0.3
STGD	Second/third-growth deciduous forest found in small strips within clear-cuts	2.0	0.5
STGM	Second/third-growth mixed forest	6.9	1.7
STGMR	Second/third-growth mixed forest, regeneration size	4.4	1.1
TGCR	Third-growth conifer forest, regeneration size	14.6	3.7
TGCS	Third-growth conifer forest, from regeneration size to small-diameter trees	1.4	0.4
TGDR	Third-growth deciduous forest	1.7	0.4
All habitat types		100.0	23.5

^a In a corridor 100 feet on either side of the centerline of the road.

Noxious Weeds

Populations of noxious weeds are a pre-existing condition in the project corridor, particularly adjacent to Camp Grisdale Road. The proposed roadway improvements are likely to reduce overall noxious weed species habitat within the project corridor, due to reduced frequency of disturbance from ongoing roadside clearing, grading and excavation during maintenance of this gravel road. Mitigation measures implemented during construction would minimize noxious weed growth on disturbed soils, as described in the Construction Impacts section. With mitigations, no indirect effects are anticipated for the preferred alternative.

Mitigation Measures

The following mitigation measure is proposed:

- Revegetation of all temporarily cleared areas would occur as soon as possible after construction is complete. Native species would be planted in areas where vegetation is removed. Restrictions to vegetation removal for threatened and endangered wildlife habitat is covered in the threatened and endangered effects analysis section.

Wildlife

No-Action Alternative

No effects on wildlife species are expected from the no-action alternative. Legal driving speed limits would remain lower on the unpaved roadway. No wildlife habitat would be removed for the no-action alternative.

Preferred Alternative

Adverse long-term impacts on wildlife due to the proposed project would include permanent loss of habitat along the proposed road edge. During construction approximately 23.5 acres of habitat (including 3.7 acres of clearcut) would be disturbed, and a portion of that would be permanently lost. Most trees within the forested habitat that would be lost are small diameter coniferous and deciduous trees that are at the forest edge and are already somewhat disturbed. The most high quality forest habitat for wildlife lost in realignment areas would include only 0.83 acre of mature (MOGC in Table 5-1) and 10.9 acres of second growth conifer forest (SGCL in Table 5-1). Only 16 large-diameter trees (21 inches dbh or greater) are expected to be felled during construction of the project. This habitat is the most valuable to wildlife but has been disturbed by nearby clear-cutting. Permanent loss of nesting, foraging, roosting, perching, and refuge habitat that is currently within the project area would occur but within the disturbed area adjacent to the road. Animals that are mobile would likely relocate to other areas where habitat is available. Others that are less mobile such as amphibians, reptiles, and mollusks are not likely to survive roadway construction.

Loss of wetland and riparian habitat would result in impacts on wildlife species that use these areas for all or a portion of their life cycle. Wildlife that use these areas were described under the construction section above. A reduction in wetland and riparian habitat would displace these animals to other locations where they would have to compete for less habitat. Habitat lost is for the most part adjacent to the existing road. Because of vehicle travel and maintenance, wildlife are less likely to use habitat closest to the road compared to areas farther from the road. The amount of habitat lost is small in comparison to that remaining. Approximately 23.5 acres of habitat would be removed, out of 7,000 acres remaining within 0.5 mile on either side of the road.

Post-construction indirect effects on wildlife due to the proposed project may include potential

harm from increased traffic and vehicle speed. Increased traffic and speed have the potential to harm a greater number of animals that would cross the road. Animals such as mammals, amphibians, reptiles, and mollusks are those that may be affected by increased traffic and speed. Because elk regularly occur in the project corridor and cross the roadway frequently, elk would be at increased risk of collision as a result of increased traffic and speed. Sight distance, however, would be sufficient on the road for motorists to see elk in the road and avoid collisions.

Mitigation Measures

There are no federal, state, or local regulations that specifically require mitigation for loss of wildlife habitat for unprotected species. However, the measures implemented to protect wetlands, streams, fish habitat, and protected species would also protect other wildlife species and habitat.

- Areas cleared would be limited to those necessary for construction.
- Areas temporarily cleared would be revegetated with native species.
- Conservation measures prescribed under the threatened and endangered species section would also benefit non-special-status wildlife species.
- Mitigation measures listed under the fish and fish habitat section would provide protection for aquatic species (e.g., amphibians) located in adjacent watercourses.
- All standing dead and live trees that need to be removed for road construction or for safety on Olympic National Forest lands would be felled away from the road and left, if possible, to provide habitat for species dependent on downed wood, including terrestrial mollusks.
- Under advisement of WDFW biologists, wildlife crossing signs would be strategically placed in high-use or concentrated wildlife use areas to warn motorists of the potential for animals to cross the road.

Fish and Fish Habitat

No-Action Alternative

Continued sedimentation and gravel migration to streams would occur under the no-action alternative. Direct effects of sedimentation on fish and fish habitat may include adverse effects to channel conditions and processes resulting in effects on fish and prey species survival, the food web, and water quality conditions, such as water temperature and dissolved oxygen. Also, fine sediments can influence incubation survival and emergence success. Fish spawning habitat downstream of the project corridor would be affected and could impair fish migration over time. Existing culverts would continue to act as fish passage barriers, which precludes available habitat

from use by fish species.

Preferred Alternative

Replacement of culverts that currently create fish passage barriers would have a beneficial effect on fish species by removing the barrier and increasing the availability of fish habitat. Additional 6.75 miles of spawning, rearing, and foraging habitat would be available to these fish species after culvert replacements are complete.

Potential long-term impacts on fish and fish habitat due to sedimentation that are relevant to the Camp Grisdale Road project are described in the Forest Service biological opinion regarding culvert removal on Forest Service lands (USFWS 2004) and are paraphrased below as they apply to this project.

Sedimentation may result from the following activities associated with culvert replacement or removal: 1) excavation above the wetted perimeter, 2) restoring streamflow on the reconstructed streambed, 3) backfilling and headwall construction, 4) disturbance of the bank and riparian area by construction and restoration activities, and 5) maintenance and remedial construction activities. The introduction of sediment can have multiple long-term adverse effects on channel conditions and processes resulting in effects on fish and prey species survival, incubation survival and emergence success, the food web, and water quality conditions, such as water temperature and dissolved oxygen (Rhodes et al. 1994, Weaver and White 1985). However, in the long-term sedimentation within streams would be reduced due to paving the road.

Due to the reduction of sedimentation and access to new fish habitat, it is expected that the project would have beneficial effect on fish species and fish habitat within and near the project corridor. Also, culvert replacement would add an additional 0.15 acre of restored fish habitat and open new access to approximately 6.75 miles of stream habitat.

Indirect effects on fish would be similar to the direct effects from construction of the preferred alternative for fish present downstream from the project corridor. However, in the long-term, beneficial effects are expected for fish downstream of the project corridor from the reduction in sedimentation due to the paved road. Also, fish from downstream would travel farther upstream to utilize additional spawning, rearing, and foraging habitat that would be available due to fish-passable culvert replacement.

Mitigation Measures

- Culverts at ARs 9, 11, 19, 27, 30a, 30b, and 48 requiring aquatic organism passage (AOP) would be designed in accordance with accepted stream simulation methods. Spans were defined based on measured active channel widths. Culverts would be countersunk and backfilled with a mixture of conserved and imported streambed material. Stone would be added to the streambed material mixture as needed for simulating natural

stream roughness elements and energy dissipation features. Fine-grained material would be added to reduce subsurface flow conditions. At AR 25, a bridge structure would be designed to restore the natural flow of the stream. Streambed material and elevations would be restored to match those of the surrounding streambed material. Stream banks would be restored and planted with native vegetation appropriate to the site to enhance fish habitat. It is estimated that a total of 0.15 acre of the streambed would be restored for fish use as part of this mitigation.

- A wetland mitigation area would be constructed at the Neil Creek (AR 27) crossing and realignment area, including wetland creation within the existing roadway that would be abandoned north of the crossing and creation of wetlands in recently cleared areas south of the crossing. The mitigation area would total approximately 1.8 acres.
- Erosion controls would be monitored and maintained until site restoration is complete.
- Appropriate state of Washington guidelines for timing of in-water work periods specified for the relevant listed fish species (unless directed otherwise by USFWS) would be followed. USFWS and WDFW have stipulated an in-water work window of July 15 through October 15.
- The proposed project would comply with applicable conditions specified by WDFW and USFWS.
- Disturbed ground where runoff has the potential to drain into stream channels would be revegetated or protected from surface erosion by seeding, mulching, and other methods prior to the fall rainy season. Within one year after project completion, disturbed stream banks would be revegetated.
- Excess material (spoils) would be disposed of in a site approved by WFLHD to prevent entry to stream channels or other water bodies.
- If placement of large woody debris is undertaken, it would be conducted in coordination with WDFW, the Forest Service, USFWS, and USACE.

Additional conservation measures are described under the threatened and endangered species section.

Threatened and Endangered Species

This section discussed the potential long-term impacts to threatened and endangered species within the project corridor. ESA Section 7 effect determinations were made in the Biological

Opinion issued by USFWS in October 2006 and the determinations agreed with the determinations made by WFLHD in the original draft EA (see Appendix B).

Fish and Fish Habitat

Bull Trout

No-Action Alternative

No change in existing effects on bull trout habitat would result from the no-action alternative. The continuing sedimentation in stream channel habitat would affect prey species survival, the food web, and water quality conditions.

Preferred Alternative

Although bull trout have not been documented in the study area and its vicinity, potential habitat does exist within the project corridor and study area (Table 4-5). Potential construction-related impacts on bull trout are discussed at the end of Chapter 5. Most existing culverts are planned to be replaced along the project corridor, and some of them would affect bull trout habitat. Bull trout habitat is present in ARs 19, 25, 27, 35, 44, and 48. Culverts are proposed to be replaced at ARs 19, 27, and 48 with fish-passable culverts and at AR 25 with a bridge. A bridge was constructed at AR 35 in 2004. This would result in a long-term beneficial long term effect on bull trout and bull trout habitat because it would restore 0.075 acre of fish habitat and provide access to 6.25 miles of stream habitat in streams that have potential future use by bull trout.

Vegetation removal along riparian areas would occur at culvert replacement areas. The cleared areas, where they have not been paved, would be restored to original grade and revegetated with native plants. Although a minor amount of vegetation in the riparian areas near the road may be lost to pavement, impact to bull trout habitat is expected to be negligible.

Potential impacts to bull trout and bull trout habitat due to sedimentation is similar to that described in the Fish and Fish Habitat section.

Conservation Measures

Mitigation measures discussed under the fish and fish habitat section would also apply for bull trout. Additionally, the following conservation measures would be implemented to mitigate the long-term impacts of the Camp Grisdale Road project on bull trout. More detailed conservation measures are provided in the biological assessment prepared for this project (Herrera 2005c).

- Culverts in streams that contain bull trout habitat are proposed to be replaced at ARs 19, 27, and 48 with fish-passable culverts and at AR 25 with a bridge. Details of the aquatic organism passage culverts are described under the conservation measures in the Fish and Fish Habitat section. It is estimated that a total of 0.075 acre of the streambed would be restored for fish use as part of this mitigation.

Effect Determination

The proposed action *may affect* bull trout because:

- Temporary sedimentation and physical disturbance of potential suitable habitat might occur during construction.

The project is *not likely to adversely affect* bull trout because:

- Bull trout have not been documented in the vicinity of the project corridor
- Additional potential suitable habitat for bull trout would be accessible due to replacement of culverts with fish-passable structures at ARs 19, 25, 27, and 48.

Critical Habitat

A *may affect* determination is warranted for bull trout critical habitat because:

- The project includes in-water work approximately 0.5 to 2.0 miles upstream of bull trout critical habitat in the Wynoochee River.

A *not likely to adversely affect* determination is warranted for bull trout critical habitat because:

- The project would result in minor water quality impacts within the action area. However, the project action area lies in the range of 0.5 to 2.0 miles upstream from bull trout critical habitat in the Wynoochee River, except for a very short segment (0.25 mile) of stream that is within 0.25 mile of Camp Grisdale Road.
- The project would not result in measurable impacts on primary constituent elements within bull trout critical habitat.
- The project would have the beneficial effect of restoring bull trout habitat and access at four culvert crossings.

The project *will not destroy or adversely modify* bull trout critical habitat because:

- The critical habitat is distant (0.5 to 2.0 miles) and downstream from the tributaries in the project corridor, except for a very short segment (0.25 mile) of stream that is within 0.25 mile of Camp Grisdale Road.
- Sedimentation in the Wynoochee River would be negligible due to the project.
- Approximately 0.075 acre of potential suitable bull trout habitat would be restored at four culvert crossings, and access to an additional 6.25 miles of potential bull trout habitat would be provided. Since the impacts to

critical habitat are negligible and habitat would be restored, this would not threaten the continued existence or recovery of bull trout.

Wildlife

Marbled Murrelet

No-Action Alternative

No adverse effects on marbled murrelets are expected to result from the no-action alternative.

Preferred Alternative

Three occupied marbled murrelet sites identified by project biologists using the Pacific Seabird Group standard survey protocol (Mack et al. 2003) are located at the northern extent of the project corridor on Olympic National Forest land (Figure 4-7). Also, marbled murrelets were preliminarily detected at a site located within the lower 1.5 miles of the project corridor, but were not observed or detected in 2005 (Figure 4-7).

The proposed road improvement and realignment activities would result in potential impacts on marbled murrelets from loss or modification of suitable and critical habitat. Beneficial effects from noise reduction due to the project are expected. Road construction within the national forest would occur in Phase 2 of the project, and FHWA may reevaluate the road design in order to further reduce impacts on marbled murrelet critical habitat.

The estimated amount of clearing by habitat type is provided in the biological assessment (Herrera 2005c). Approximately 19.8 acres of forest habitat would be cleared under the proposed project. The remaining 3.7 acres is recent clear-cut or open field. Of the estimated 19.8 acres of forest that would be cleared, 0.83 acre is mature forest (MOGC in Figure 4-5), and 10.9 acres is second-growth forest, both of high value to wildlife. Marbled murrelets have been documented in mature forest (MOGC) areas, and their habitat would be directly affected by clearing in this area. Clearing of habitat would occur in narrow patches (average width of 10 feet) and in an already disturbed area along the road. Nesting is unlikely to occur within 10 to 30 feet from the road and larger tracts of undisturbed critical habitat are intact to the west of the project corridor. Although a relatively minor amount of critical habitat would be removed due to the project, the proposed action is expected to have minor impacts on murrelets and their habitat.

A paved surface would reduce noise generated by vehicles on the existing uneven gravel surface. Ongoing maintenance activities and roadway improvements (bridge and road surface or prism improvements and maintenance, weed control and clear zone maintenance) require the use of heavy machinery, which would generate minor noise impacts. Therefore, long-term effects to marbled murrelet are expected to be decreased slightly from current conditions. There may be some increases in traffic levels due to improved driving conditions but the increases are not expected to differ from projected increases in traffic for the existing road. Noise impacts during construction are discussed under the construction impacts section for marbled murrelet.

Critical Habitat

An assessment of the impacts to constituent elements of marbled murrelet critical habitat were analyzed on Forest Service lands, where the designated critical habitat and LSR occur (see biological assessment [Herrera 2005c]). The primary constituent elements include nest trees (>21 inches dbh), and surrounding conifer trees that are approximately 50 percent of the site potential tree height of 200 feet. The following paragraphs discuss the potential impacts on forest habitat and marbled murrelet critical habitat.

FHWA modified the design of the road project to avoid or minimize impacts on critical habitat. Biologists determined that 16 potential marbled murrelet nest trees (live trees greater than 21 inches dbh) may be felled or damaged during construction (see Biological Assessment [Herrera 2005c]). A 2006 field review with USFWS habitat biologist determined that only two trees had potential nesting structure. According to the BO, the two trees are exposed laterally and are minimally suitable for nesting. Forest habitat clearing estimates within critical habitat are anticipated to be 0.83 acre of mature old-growth conifer forest and 0.38 acre of immature forest habitat. Therefore, approximately 1.2 acres of buffer trees (mature and immature conifer forest) surrounding nest trees is expected to be cleared in discontinuous patches. The clearing width of mature conifer and immature conifer habitat patches along the road edge varies from 1 foot to 30 feet and averages approximately 10 feet wide. Clearing of critical habitat would occur along only 1.3 mile of disturbed road edge (Figure 4-7). All standing dead and live trees that need to be removed for road construction or safety would be felled away from the road and, if possible, left to provide habitat for species dependent on downed wood. Also, the removal of vegetation would be completed in a manner that minimizes impact to adjacent critical habitat.

Murrelets have been determined to occupy marbled murrelet survey sites MM-C, MM-D determined through 2004/2005 protocol surveys and MM-F through historic surveys (Figure 4-7). These occupied habitat units abut the road for a total distance of 0.9 miles. Approximately, 0.6 acre of occupied habitat including two potential nest trees is expected to be cleared within the project corridor. The marbled murrelet protocol surveys are only valid for 2 years, after which time all critical habitat is considered to be occupied.

Road construction within the national forest would occur in Phase 2 of the project, and FHWA will reevaluate the preliminary road design during detailed design to further reduce impacts on marbled murrelet critical habitat.

The long-term impacts of habitat removal would be minor in comparison to the remaining area of critical habitat. The impact to critical habitat would occur in narrow patches within disturbed areas abutting the existing road edge; not prime habitat for marbled murrelet. The project would clear only 0.0007 percent of the 162,700-acre WA-03 critical habitat unit, therefore having a relatively minor effect on the habitat.

The USFWS BO states that the proposed project is not likely to jeopardize the continued existence of the murrelet or alter the function or conservation role of designated critical habitat.

Conservation Measures

The conservation measures below are extracted from those specified by USFWS (2003b) in the biological opinion regarding effects of Olympic National Forest program activities on northern spotted owl, marbled murrelet, and bald eagle. These program activities include road building. More details regarding conservation measures for marbled murrelet are provided in the biological assessment for this project (Herrera 2005c).

Measures for Habitat Removal

- When feasible, harvesting of trees from within 300 feet of suitable murrelet habitat would be avoided or minimized.
- Vegetation cut within the marbled murrelet critical habitat would occur outside the marbled murrelet nesting season.
- If vegetation is cut within suitable or critical habitat, it would be felled and left within the forest to provide woody debris habitat features.

Measures for Handling Individual Trees

- Known occupied murrelet nest trees would not be removed.
- If hazard trees or potential nest trees would be removed within suitable murrelet habitat during the early breeding season (April 1 to August 5) on Forest Service land, review by a wildlife biologist would be required.
- When feasible, the number of large conifers (greater than or equal to 21 inches dbh) that would be removed would be minimized. Trees would be felled in a manner to minimize impacts on surrounding trees and away from suitable habitat, if possible and safe to do so.
- When feasible, the removal of platforms, trees with platforms, and trees providing cover to platforms even if the stand is currently unoccupied by murrelets would be minimized and avoided.
- Proposed removal of any tree larger than 36 inches dbh within marbled murrelet nesting habitat would require review by a wildlife biologist.

Measures for Ground-Level Disturbance

- Habitat or nest sites would be avoided to the extent possible in the final design.

Measures for Marbled Murrelet Designated Critical Habitat

- Habitat or nest sites would be avoided to the extent possible in the final design.

The USFWS Biological Opinion dated October 2006 offers the following conservation recommendations for operation of the project:

“If a tree scheduled for felling is within a riparian corridor but at a distance from the floodplain that is greater than the height of the tree, the felled tree should be left on site. If the tree to be felled is within a distance equal to or less than the height of the tree from the active floodplain, the tree should be felled toward the aquatic habitat and left on site unless leaving the tree will pose additional danger to human health such as to cause injury, pose a high risk to downstream facilities or prevent the intended use of the facility from occurring.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.”

Effect Determination

Marbled murrelets occupy sites that are adjacent to the project corridor for a distance of 0.9 mile on Forest Service land (see Biological Assessment [Herrera 2005c]). Murrelets at these sites would be adversely affected by removal of critical habitat. Due to project timing restrictions of 2 hours after sunrise and 2 hours before sunset during a period specified by USFWS, noise generation is not expected to affect nesting.

According to the 2006 USFWS BO, the proposed action may remove two potential nest trees and 1.2 acres of buffer trees outside the nesting period. Therefore, the effect determination for harm to the marbled murrelet would be *may affect, likely to adversely affect*. Clearing of habitat would occur in narrow patches (average width of 10 feet) and in an already disturbed area along the road. Nesting is unlikely to occur within 10 to 30 feet from the road and larger tracts of undisturbed critical habitat are intact to the west of the project corridor. Although a relatively minor amount of critical habitat would be removed due to the project, the proposed action is expected to have minor impacts on murrelets or their habitat. Also, project noise is not expected to disturb marbled murrelet nesting. For these reasons, the project would not threaten the continued existence or recovery of the species.

Critical Habitat

The proposed action is expected to require removal of two potential nest trees and only 1.2 acres of forest buffer within a narrow, currently disturbed area along the existing roadway. The impact to critical habitat would occur within disturbed areas abutting the existing road edge; not prime habitat for marbled murrelet. The project would clear only 0.0007 percent of the 162,700-acre

WA-03 critical habitat unit, therefore having a relatively minor effect on the habitat. “Impacts to potential nest trees would result in adverse effects to critical habitat, however the total adverse effect would not measurably change stand conditions, and therefore influence the function and conservation role of the critical habitat unit. For these reasons, the Service expects the proposed action will not alter the function of designated critical habitat to serve the intended conservation role for the species” (USFWS 2006).

Northern Spotted Owl

No-Action Alternative

No effects are anticipated from the no-action alternative.

Preferred Alternative

Though no northern spotted owls were identified in the vicinity of the project corridor during initial surveys, because potential suitable habitat is present and there is historic evidence that the area was occupied by northern spotted owls, it is assumed that potential project impacts could affect northern spotted owls. Surveys are to be conducted over 2 years between March and August. In 2004 and 2005, three complete surveys (each completed within a 1- to 2-day period) took place from early May through late July. The proposed road improvement and realignment activities would result in potential impacts on remaining suitable habitat and in the form of disturbance by noise, increased traffic and human activity.

Road realignment could potentially remove vegetation that buffers the trees that provide suitable nesting or roosting characteristics for northern spotted owl. Impacts on vegetation within the most suitable northern spotted owl habitat on Olympic National Forest land would be similar to those described for marbled murrelet critical habitat. The impact to northern spotted owl suitable habitat would occur in narrow patches within disturbed areas abutting the existing road edge; not prime habitat for owls. The project would clear only 0.0007 percent of the 162,700-acre WA-03 critical habitat unit, therefore having a relatively minor effect on the habitat. Areas of realignment would result in the largest swath of vegetation removal, but these realignment areas pass through poor-quality but potentially suitable habitat for northern spotted owls.

Construction-related impacts including potential noise impacts are discussed in the construction impacts section at the end of Chapter 5.

Conservation Measures

More detailed conservation measures for northern spotted owl are provided in the biological assessment (Herrera 2005c).

- Vegetation cut within the northern spotted owl suitable habitat would occur outside the owl’s nesting season.

- The removal or disturbance of suitable and dispersal habitat would be minimized.
- Damage to potential northern spotted owl nesting trees adjacent to the project would be minimized.

USFWS (2003b) specified the following additional conservation measures in the biological opinion regarding effects of Olympic National Forest program activities on northern spotted owl, marbled murrelet, and bald eagle:

Measures for Handling Individual Trees

- If a northern spotted owl nest tree is found in the project corridor, it would not be removed.
- The number of large conifers (21 inches dbh or larger) removed would be minimized or avoided. Trees would be felled in a manner to minimize impacts on surrounding trees and away from suitable habitat, if it is possible and safe to do so.
- On Forest Service land, any removal of dispersal habitat within northern spotted owl designated critical habitat would require review by a Forest Service biologist.
- On Forest Service land, any proposed removal of any tree larger than 36 inches dbh within suitable spotted owl habitat would require review by a Forest Service wildlife biologist.

Effect Determination

Two years of surveys of northern spotted owls indicate that the species may not be present in habitat within 0.5 mile of the project corridor. Barred owls, who out-compete northern spotted owls, were observed at the following northern spotted owl sites along the project corridor in 2004 and 2005: SO-C, SO-D, SO-E, and SO-F. However, suitable habitat for the northern spotted owl exists along the project corridor. The best suitable habitat for northern spotted owls exists in the same location as the critical habitat for marbled murrelet.

Impacts on suitable habitat for northern spotted owls are the same as those for marbled murrelet. FHWA has modified the design of the road project to avoid or minimize impacts on suitable northern spotted owl habitat. However, 16 potential nest trees (greater than 21 inches dbh including snags) may be felled or damaged during construction. Forest habitat clearing within suitable spotted owl habitat is estimated to be 0.83 acre of mature conifer forest and 0.38 acre of immature forest habitat, for a total of 1.2 acres of impact.

In following the guidance of the USFWS (2003b) biological opinion, the following effect

determination is recommended for the northern spotted owl. Northern spotted owls were not found to be present within suitable habitat in the action area. The proposed action may remove potential nest trees and surrounding trees; however, it would not degrade habitat components. Also, removal of habitat would occur outside the nesting period (March 1 to September 30). Noise generation during the construction period would occur at distances greater than the disturbance thresholds or at times specified by USFWS. Therefore, the effect determination for the northern spotted owl would be *may affect, not likely to adversely affect*. Northern spotted owl surveys are only valid for two years, after which time suitable habitat is considered occupied.

Bald Eagle

No-Action Alternative

The no-action alternative is not expected to affect bald eagles.

Preferred Alternative

Although no bald eagles were identified within the project corridor, eagles may perch and possibly forage in areas adjacent to the project corridor. Impacts would include loss or modification of potential perching habitat, and potential disturbance by noise and human activity. Of the estimated 19.8 acres of forest that would be cleared along the entire alignment, 0.83 acre is mature forest (MOGC in Table 5-1) and 10.9 acres of second-growth is of highest value to bald eagles. Areas of realignment would result in the largest amount of vegetation removal, but these realignment areas pass through poor quality bald eagle habitat. Eagles are unlikely to frequently perch in the poor-quality habitat areas. Since eagles are only expected to spend limited time in the project area, only minor impacts to bald eagle are anticipated. Eagles are likely to use other trees to perch in after trees have been cleared in the project corridor. In the long-term, removal of vegetation should have a minor affect on bald eagle, since better nesting and perching habitat is located outside the project corridor.

Construction-related impacts including noise impacts are provided in the Construction Impacts section at the end of Chapter 5.

Conservation Measures

The following conservation measures were derived from the biological opinion for Olympic National Forest program activities (USFWS 2003b). More detailed conservation measures for bald eagle are provided in the biological assessment prepared for this project (Herrera 2005c).

Measures for Handling Individual Trees

- When feasible, the number of large conifers (greater than or equal to 21 inches dbh) removed would be minimized. Trees would be felled in a manner to minimize impacts on surrounding trees and away from potential

roosting or nesting habitat, if it is possible and safe to do so.

- On Forest Service land, any proposed removal of any tree larger than 36 inches dbh within a bald eagle use area would require review by a Forest Service wildlife biologist.

Effect Determination

The closest documented bald eagle nest is approximately 2.7 miles north of the project corridor; therefore, noise from construction is not expected to affect nesting bald eagles. However, they may be disturbed if they are perching within the sound injury threshold distance (0.25 to 0.5 miles) from the project activities. Also, vegetation clearing may result in impacts on potential perching habitat, although only 16 trees with dbh of 21 inches or greater and 11.73 acres of relatively high quality forest habitat (mature and second growth forest) would potentially be cleared in the disturbed area along the road. Eagles would avoid these areas and perch on other trees in the adjacent forest. For these reasons, the recommended effect determination is *may affect, not likely to adversely affect* bald eagles.

Essential Fish Habitat

No-Action Alternative

Continued airborne dust and sedimentation of essential fish habitat adjacent to the road would occur under the no-action alternative.

Preferred Alternative

In the short term, essential fish habitat would be temporarily affected by sedimentation during construction. In the long term, essential fish habitat would benefit from the proposed project, because water quality would be improved by reducing sedimentation from dust and gravel migration that occurs under existing conditions. Also, replacement of existing culverts with fish-passable culverts in select streams would increase fish access to habitat, benefiting essential fish habitat.

Effect Determination

Overall, the proposed project *would not adversely affect* essential fish habitat for Pacific salmon.

Land Use

No-Action Alternative

Under the no-action alternative, the existing Grisdale Road project corridor would be maintained and would remain operational. No substantial changes in land use would be expected. Under the

no-action alternative, there would be no post-construction indirect effects.

Preferred Alternative

The proposed project complies with the NW Forest Plan and the Grays Harbor Comprehensive Plan. No development is planned in this area. It is unlikely that land use would change or that development would result from the proposed project. The project would result in some conversion of forestland to highway and right-of-way. No substantial changes in land use or development patterns would be expected from the implementation of the Camp Grisdale Road project. Approximately 23.5 acres of roadside land would be permanently cleared for the road expansion and realignments. Widening, paving and improving the safety of the roadway corridor would facilitate access to recreational opportunities in the project area and might generate a modest increase in use of these facilities. Widening and paving the roadway would generate a modest increase in tourist traffic, but would not contribute substantially to increased traffic levels over those conditions projected for the future without road improvements.

Development of material source sites, if it occurs, would result in minor effects to land use in the area. No development is planned for the area. It is unlikely that land use would change after completion of the project.

Coastal Zone Federal Consistency Determination

Analysis of water quality, wildlife, threatened and endangered species, wetlands, and other resources are analyzed under those sections in this document. No direct impacts to the coastal zone of Grays Harbor County would result from the proposed project. Ultimately, water quality impacts resulting from the proposed project would be beneficial. Impacts to salmon from improved fish passage would also be beneficial.

A letter requesting a Federal Consistency Determination was sent to the Washington Department of Ecology. In Washington state, a Consistency Determination is issued only after the FONSI is issued and permit applications have been submitted. If the Action Alternative is selected, during the permitting process, copies of the permit application will be sent to the Washington Department of Ecology. The Washington Department of Ecology will determine if the project is consistent.

Mitigation Measures

No substantial changes in current land use are expected to result from the preferred alternative; therefore no mitigation is proposed.

Socioeconomics

No-Action Alternative

Under the no-action alternative, Camp Grisdale Road would continue to be maintained as a

gravel road, periodically graded to maintain road quality. Loggers, tourists, and dam workers would continue to use the road for access to Wynoochee Lake and the surrounding forest. No socioeconomic benefits or adverse effects are expected to result from the no-action alternative.

Preferred Alternative

An improved road would have a positive effect on the local economy if recreational use of the project area increases. Improvements in the roadway within the project corridor would result in increased efficiencies for logging and log-transporting operations. The paved road surface would reduce gravel-related damage to tourist vehicles and boats.

Following the improvement of Camp Grisdale Road, Wynoochee Valley Road (the county road that links Camp Grisdale Road to Montesano) would experience a marginal increase in tourist traffic. However, the magnitude of this effect would not be great, because the road is used primarily by local residents, and the newly paved route would not attract large numbers of tourists from outside the area. In addition, the paved Camp Grisdale Road is not expected to result in the development of additional businesses in the area.

Paving the road would decrease maintenance needs and costs. Maintenance should be substantially reduced for the projected 20-year life span of the roadway and appurtenances. This represents a considerable cost saving for the maintaining agency.

Environmental Justice

No-Action Alternative

Under the no-action alternative, Camp Grisdale Road would continue to function in its current condition, and racial and ethnic minorities, as well as low-income persons, would not be adversely affected if the road is not improved. Under current conditions, the unpaved road is fully functional and does not result in any disproportional effect on minority or low-income people.

Preferred Alternative

Because there are no racial or ethnic minorities or low-income populations within the project corridor, no disproportionate impact would occur. No residences are located within the project corridor. After construction is complete, operation of Camp Grisdale Road would have no disproportionate effect on racial or ethnic minorities, or low-income people. There would be no indirect effect on environmental justice after construction of the proposed project is complete. The proposed project complies with Executive Order 12898 and Title VI of the 1964 Civil Rights Act.

Public Services and Utilities

No-Action Alternative

Under the no-action alternative, there would be no interruption to public services or utilities, and therefore no impact. Emergency vehicles would continue to travel slowly on the existing unpaved road.

Preferred Alternative

Emergency vehicles responding to calls in recreation areas served by the road currently must travel at low speeds to avoid potholes. An improved road surface would allow emergency vehicles to more efficiently reach and evacuate injured persons to emergency facilities.

Three Tacoma Power vaults associated with the Wynoochee River Project are located close to the road near the northern terminus of the project corridor. The roadway design avoids these vaults. There would be no impacts on utilities in the remainder of the project corridor because no other utilities exist along the project corridor.

The improved road may draw more recreational users to the area, which might lead to an increased demand for public services. There are currently no plans to increase police or fire protection or other public services for the project corridor.

Wynoochee Valley Road residents and Tacoma Power employees have commented that they believe an improved road would increase recreational use and would increase demand for emergency use of private telephones.

Mitigation Measures

Mitigation for impacts on public services and utilities includes the following:

- The proposed roadway alignment would avoid the power vaults.

Archaeological and Cultural Resources

One site, the Simpson Timber Company logging railroad roadbed, was found to be mostly outside the APE, with a small segment extending slightly into the APE. The abandoned roadbed is not eligible for listing in the National Register of Historic Places.

No-Action Alternative

Under the no-action alternative, no direct or indirect impacts on the railroad roadbed are expected because there would be no disturbance affecting it.

Preferred Alternative

The previously recorded cultural resource, the Simpson Timber Company logging railroad roadbed, is not eligible for listing on the National Register, and the resource would not be affected by the proposed project. Therefore, the proposed project would have *no effect* upon any known cultural resource. The cultural resources report (AHS 2004) was submitted to the state historic preservation office (SHPO) that concurred in a letter dated August 22, 2005 with the project effect determination on cultural resources (Appendix B).

Mitigation Measures

In the event that cultural resources are identified during Camp Grisdale Road improvement project activities, work would be halted in the immediate vicinity of the find and a professional archaeologist notified to assess the resource. The state historic preservation office would be consulted.

Scenery and Aesthetics

Aesthetic values and the perception of visual impacts are subjective and vary from person to person. Although this section attempts to present objective descriptions of the potential visual impacts of the alternatives, it cannot address all individual perceptions of the study area. This assessment of impacts is based on concepts of contrast and harmony underlying most systems of visual evaluation. Visual impacts have been evaluated based on the predicted responses of both viewers of the road and viewers from the road.

No-Action Alternative

Under the no-action alternative, there would be minimal impacts on scenery and aesthetics. The existing visual environment would remain the same. As in the past, the existing roadway would be periodically graded, although this would have no new visual impact. Dust from the road would continue to settle on adjacent vegetation.

Preferred Alternative

The improved and widened roadway would not contrast with its surroundings much more than does the existing roadway.

Permanent visual changes resulting from the project would be the most apparent to persons who are familiar with the project corridor. Vegetation and pavement would be removed along the edge of the existing road and would be restored in some areas. The pavement would differ in appearance from the existing gravel surface. However, because the road would remain a two-lane road, the improvements would have no substantial visual impact.

Some segments of the road abandoned because of realignment would remain as access roads for Green Diamond Resources operations and would not be obliterated or planted. The exception to this is the abandoned road at Neil Creek that would be recontoured to create wetland. Portions of the abandoned road would be visible from the new alignment.

Mitigation Measures

The mitigation measures for potential aesthetic impacts would include the following:

- Roadside clear zones would be limited to the minimum size necessary to provide adequate visibility for safety.
- Staging areas, construction areas, and material source and waste sites would be reclaimed as appropriate.
- Areas disturbed during construction would be seeded to reestablish vegetation.

Recreation

No-Action Alternative

Under the no-action alternative, there would be minimal impacts on recreation. Use of recreational areas might gradually increase over time, resulting in a corresponding increase in traffic.

Preferred Alternative

In the long term, the proposed action would enhance the driving experience of individuals using the road to access recreation areas. Visibility resulting from proposed curve realignments, wider shoulders, and increased clear zones would increase the safety for vehicles.

No additional access points or developments are proposed. However, the straighter, smoother, safer roadway would enhance travel for motorists, and having experienced its improved drivability, these motorists would potentially visit more often. Therefore, the improvements in the roadway might increase demand at recreational facilities. Tacoma Power expects visitation levels to rise for the Coho Campground and the Wynoochee River Project day use area, and the agency anticipates a corresponding rise in vandalism at its facility. This is based on similar rises in visitation and vandalism at other Tacoma Power facilities (Mazur 2004a).

No improvements are currently planned for the Tacoma Power Wynoochee River Project day use area, Forest Service campgrounds, or trails near Wynoochee Lake. These recreation areas might experience heavier use, particularly during the busy summer months.

Section 4(f) Impacts

Section 4(f) of the federal Department of Transportation Act stipulates that the FHWA and other Department of Transportation agencies cannot approve the use of land from a significant publicly owned public park, recreation area, wildlife or waterfowl refuge, or any significant historic site. No Section 4(f) properties are affected by the proposed project.

Air Quality

No-Action Alternative

Under the no-action alternative, existing impacts on air quality would continue. Vehicles using the unpaved road currently generate dust, particularly during the dry summer months. Dust levels would increase as visitor use and traffic levels gradually increase over time. Dust affects the health of roadside vegetation, and this impact would increase under the no-action alternative. Safety issues related to poor visibility caused by dust would continue and would increase as traffic increases.

Preferred Alternative

Air quality would improve, because paving the roadway would eliminate dust generation. Traffic counts through the project corridor would not increase enough to affect air quality by producing excessive vehicular exhaust emissions. Despite short-term deterioration of ambient air quality during construction, including unpleasant odors, project construction would not result in long-term impacts on air quality. The preferred alternative would not affect the U.S. EPA air quality attainment status for the area. Because dust resulting from traffic impairs visibility, traffic safety conditions would improve with lower dust levels.

Noise

No-Action Alternative

No-action alternative noise levels would slightly increase as traffic noise levels increase.

Preferred Alternative

A paved surface would reduce noise generated by vehicles on the existing uneven gravel surface. Ongoing maintenance activities and roadway improvements (bridge and road surface or prism improvements and maintenance, weed control and clear zone maintenance) require the use of heavy machinery, which would generate minor noise impacts. There may be some increases in traffic levels due to improved driving conditions but the increases are not expected to differ from projected increases in traffic for the existing road. The southernmost campsite at Coho Campground is located 0.3 mile north of the northern project terminus. Therefore, no adverse effects from increased noise levels would occur under the action alternatives.

Hazardous Materials

No-Action Alternative

No impacts are expected to result from the no-action alternative.

Preferred Alternative

No post-construction impacts from releases or encounters with hazardous materials are expected to result from the preferred alternative.

Natural Resources and Energy

No-Action Alternative

No impacts are expected to result from the no-action alternative.

Preferred Alternative

Vehicles may move with more constant speed on the proposed paved road than on the existing gravel road, thereby using fuel more efficiently. No major changes in vehicle usage are expected to result from the proposed action; therefore no substantial increase in fuel use is expected after construction.

Construction Impacts

Construction impacts occur only during project construction and hence are short-term in duration. Mitigation measures are proposed as part of the project to avoid or reduce the potential construction impacts described below.

Geology and Soils

Impacts

The preferred alternative would result in new fill material where necessary to widen the existing roadway prism to width of 28 feet. New right-of-way in realignment areas at curves would require clearing of vegetation (see project description section and Figure 1-3). Natural drainage contours would be replaced and exposed soils would be replanted on cuts, fills, and stream banks. Culverts would be replaced with fish-passable culverts at ARs 9, 11, 19, 27, 30a, 30b, and 48 and with a bridge at AR-25, creating temporary disturbance of soils. For improved drainage purposes, other culverts would be replaced with new ones where needed along the proposed alignment; abandoned drainage structures at the major realignment area would be removed and the streambeds would be restored to their original contours. Approximately 23.5 acres would be cleared and graded from the existing road edge to the clearing limits of

construction, including realignment segments. The existing roadbed covers approximately 47 acres and would be excavated, regraded, and paved. Source pits for fill material would be determined as the design develops. The extent of excavation, grading, and fill material required for reconstruction and paving of the Camp Grisdale Road would be calculated as the design of the road is developed.

Mitigation Measures

The following mitigation measures are proposed to minimize the potential impacts on geology and soils:

- Slopes would be stabilized as necessary.
- Best management practices (BMPs) would be implemented as appropriate during construction.

Water Resources

Impacts

Soil and sediments along the project corridor have the potential to become contaminated due to spills, leaks, and drips of fuels, solvents, and toxic construction products. Stormwater runoff carrying eroded particles could transport these types of contaminants to downstream waters and affect water quality. If a spill of fuel, asphalt emulsion, or other toxic material were to occur at the construction site, adverse water quality impacts would result.

Temporary adverse effects to water quality would occur from disturbance of streams and stream banks during culvert replacement on Camp Grisdale Road. Construction would be scheduled during the dry months (June through September) for those areas, and given that the majority of the creeks are seasonal, construction-related water quality impacts would be avoided or minimized. Precipitation events could mobilize sediment into the stream channels and might carry it downstream approximately 0.25 mile, although use of BMPs to minimize sediment runoff would be used to prevent or minimize sedimentation of the streams and wetlands.

Sediment could be carried downstream of the project corridor during construction and adversely affect water quality, as discussed under direct effects. Pollutants from accidental spills during construction might also adversely affect water quality downstream of the project.

Mitigation Measures

The following mitigation measures would minimize adverse water quality impacts during construction along the project corridor:

- A stormwater pollution prevention plan (SWPPP) would be prepared prior to construction site disturbance, with updates as necessary as the project

proceeds. The plan could include such measures as using straw bales, rock check dams, slash filter windrows, and silt fences extensively on the perimeter of disturbed areas and in drainage channels to reduce flow velocities and trap sediments in construction site runoff and wherever possible, direct discharge construction site runoff to vegetated areas, to stream channels, or wetlands.

- An oil spill prevention plan would be prepared that would manage any toxic materials used in construction.
- Land disturbance would be limited to minimize the area of exposed soil at any point in time.
- Staging areas for construction equipment would be located away from stream channels and a barrier would be provided between staging areas and streams. All machinery maintenance involving potential contaminants (fuel, oil, hydraulic fluid, etc.) would occur at a site away from stream channels, water bodies, or wetlands.
- Soil stabilization measures would be implemented in areas that are to be revegetated within 14 days following completion of construction. Appropriate BMPs could include such measures as straw bales, rock check dams, slash filter windrows, and silt fences extensively on the perimeter of disturbed areas and in drainage channels, to reduce flow velocities and trap sediments in construction site runoff.
- Equipment use would be restricted in and near stream channels.
- Streamflows and other runoff around culvert construction would be diverted while the new culverts are installed and backfilled in their final positions and the inlet and outlet areas are stabilized.
- Turbidity of drainage channels or streams would be monitored and additional BMPs would be implemented to effectively control increased sedimentation.

Floodplains

Impacts

No construction impacts on floodplains are anticipated.

Wetlands

Impacts

The proposed improvements to Camp Grisdale Road would directly affect wetlands during construction. These direct impacts would include minor loss of water storage capacity,

temporary grading in wetlands, loss of habitat, sediment-laden runoff leaving the construction site and entering downstream waters, and the potential for accidental spills of construction chemicals.

Potential construction impacts involve direct loss of wetlands as a result of vegetation clearing and earth moving, in addition to impacts related to runoff and other disturbances. Estimates of the amount of aquatic resource acreage that may be affected by construction activities are based on the footprint of the proposed, road alignment.

- Temporary grading of small portions of wetlands would potentially occur during widening and realigning of the roadway and construction of stormwater conveyance facilities. Temporary disturbance of 0.5 acre of wetland is anticipated to occur during construction.
- Grading and filling to adjust site contours and installation of stormwater detention or drainage facilities might release sediment-laden runoff into wetlands. Sedimentation in wetlands would reduce floodwater storage capacity, adversely affect existing soil organisms, and alter the hydrologic regime by raising the elevation of the soil.

Under the preferred alternative, the effects caused by clearing and disturbance in the construction phase would continue to affect the wetlands in the project corridor until plants in these areas recover their prior vigor and stature. Stabilization of soils within the project corridor would occur with recovery of vegetation in these areas.

Clearing of vegetation in both the upland and wetland areas to prepare the site of the roadway and to provide construction access would reduce available wildlife habitat by removing habitat features (e.g., trees, snags, and other plant species). This would also result in a slight alteration of the climate within the affected wetlands.

Mitigation Measures

Impacts on wetlands during construction would be reduced by the following conservation measures and BMPs:

- Prior to construction, the limits of clearing would be marked and erosion control devices (silt fencing, straw bales, and filter bags) would be placed to prevent sediment-laden runoff from draining into the wetlands.
- Vegetation would be cleared only where construction activities occur, thereby minimizing exposed soils and subsequent erosion.
- In-water work would be confined to the period of July 15 through October 15, when salmonids are least likely to be present in the system, as stipulated by USFWS and WDFW.
- All equipment refueling operations would be conducted away from

wetlands and streams. An emergency spill containment kit would be located on the construction site, and a spill prevention, control, and countermeasures (SPCC) plan would be implemented to address prevention and cleanup of accidental spills at the site.

- All exposed soils would be stabilized.
- All stockpiles would be stabilized.
- All fill material would be placed behind silt fences to reduce sediment-laden runoff and resultant increases in stream turbidity.
- Water samples from streams crossing Camp Grisdale Road would be collected on a regular basis to monitor turbidity during construction.

Vegetation

Impacts

Forest Service and State Sensitive Species

Vascular Plants—The proposed construction would not impact the populations or distribution of these species.

Bryophytes—The proposed construction is not likely to affect populations of *Tetraphis geniculatus*, because timber-clearing and earthmoving activities would occur well away from the existing populations of this moss species. The existing clearing limit would avoid physically displacing the rotted logs they inhabit or altering the local microclimate required by this species.

Lichens—The proposed construction could affect a small number of individual populations of *Hypogymnia duplicata* if mature conifers are removed from the project corridor; however, only 16 large conifers are expected to be removed during construction. Additionally, other populations exist within the 162,700 acres of old-growth forest habitat within the vicinity of the project corridor. This species is restricted to the upper and mid-canopy of mature conifers in the project corridor. The removal of large-diameter conifers would eliminate existing individual populations from the area being cleared and would reduce the colonization potential of this species in that area by eliminating both a source of and substrate for lichen establishment. Overall, impacts to *Hypogymnia duplicata* are minor because of the large amount of habitat that exists for these lichens in adjacent areas. Therefore, the project impacts will not jeopardize the continued existence of this species or their habitat.

Noxious Weeds

The proposed construction could enable the spread of noxious weeds by removing native vegetation and exposing large areas of soil. Import of soil for construction could bring in noxious weed seeds. Weed species could spread within and outside the project corridor during construction.

Mitigation Measures

The following mitigation measures would be implemented:

- The clearing of mature timber would be minimized to reduce the effects of spreading of noxious weeds that can occur during clearing.
- To prevent importing noxious weeds into the project corridor, construction equipment would be washed prior to entering the construction area.
- Revegetation with native species would occur as soon as possible after construction.

Wildlife

Impacts

Implementation of the preferred alternative would result in temporary construction impacts on wildlife species within the project corridor. These impacts include vegetation clearing, temporal loss of habitat, displacement of wildlife, and noise. Estimated amount of clearing by habitat type is provided in Table 5-1, based on total clearing of 23.5 acres within the entire project corridor. Approximately 19.8 acres of forest habitat would be cleared under the proposed project. The remaining 3.7 acres is currently clear-cut or open field. Of the estimated 19.8 acres of forest that would be cleared, 0.83 acre is old-growth forest (MOGC in Table 5-1), and 10.8 acres is second-growth, both of high value to wildlife.

Adverse short-term effects on wildlife species that use these older forested areas are expected because of the area being affected and the difficulty in replacing forest habitat within a short period of time. However, forest habitat that would be cleared under the project is within narrow (average 10 feet wide) strips along the existing road. These areas are disturbed and would likely have fewer animals than forest areas away from the road. Animals that are mobile would likely avoid the area during construction. Others that are less mobile such as amphibians, reptiles, and mollusks are likely to be lost due to the construction of the roadway. Animals are likely to return to revegetated areas after construction is complete.

Several populations of warty jumping slug would be disturbed by the preconstruction vegetation clearing. This species appears to be common in this area, and the proposed road improvements are not likely to jeopardize the continued existence of local populations.

Noise levels associated with construction, typically up to 90 decibels at a 50-foot distance from the noise generator, might affect wildlife using habitats in the vicinity of the construction area. Studies have shown that certain wildlife species respond negatively to aircraft overflights, military operations, recreational activities, and automobile traffic (Larkin 1995; Radle undated). Noise from these activities can affect wildlife activity and communication patterns, including predator-prey relationships and reproductive success. However, effects of noise on wildlife would only be within short distances from the noise source, which would be temporary. For

example, for heavy construction equipment activity (bulldozers, trucks, motorized tools, etc.) noise, marbled murrelet and northern spotted owls are only affected within a 35-yard distance and for louder activities (jack hammering, pile driver, rock drill) within a 60-yard distance (see threatened and endangered species section). Therefore, noise impacts are likely to only affect animals that are within those distances of the noise sources and only for a temporary period.

Temporary loss of wetland and riparian habitat would result in minor impacts on wildlife species that use these areas for all or a portion of their life cycle. Areas that will be disturbed during construction are in narrow strips along the road and are already disturbed. Wildlife that use these areas as edge habitat or a water source include birds (e.g., willow flycatcher, yellow warbler, yellow-breasted chat, red-eyed vireo, Vaux's swift), amphibians (e.g., northwestern salamander and red-legged frog), reptiles (e.g., garter snake and alligator lizard), and mammals (e.g., raccoon, deer, elk, and bear). Restoration of forest habitat in areas that would be temporarily cleared during construction or where the existing road is decommissioned at realignment areas, would eventually replace lost habitat; however, 25 to 100 years would be needed to reestablish forest habitat similar to the existing habitat. Species that use grassland and shrub habitat (e.g., song birds, mice, black-tailed deer, and Roosevelt elk) would be the first to return to these areas. Gradually, species that use forest habitat would move into the area as the trees mature. Wildlife that are mobile and that use wetlands and riparian areas would relocate to other wetlands and riparian areas.

Mitigation Measures

Measures implemented to protect wetlands, streams, fish habitat, and protected species would also protect other wildlife species and habitat. Conservation measures prescribed under the threatened and endangered species section would also benefit non-special-status wildlife species. Areas cleared would be limited to those necessary for construction.

In addition, a measure would be implemented for protection of terrestrial mollusk (particularly the warty jumping slug) habitat:

- Trees and brush cleared for road construction within Olympic National Forest would be felled away from the road and left at the edge of the vegetation clearing limits to provide habitat for terrestrial mollusks and other animals that use downed logs.

Fish and Fish Habitat

Impacts

The proposed action would have temporary adverse effects on stream habitat during construction due to vegetation removal and culvert replacement as discussed under the water resources section. Culvert replacement in perennial streams may require fish be captured and stored during dewatering of the stream segment during in-water work. Only 25 of the 46 streams that cross the project corridor are perennial, the remaining streams are dry during summer months. Fish have

been documented in 13 of the streams that cross the project corridor. These activities have potential temporary adverse effects on fish species. Fish capture can result in stress or death of sensitive fish species from fish shocking or stress from handling. If all proper procedures for fish capture and storage are followed, approximately 0 to 5 percent of fish actually die during dewatering. Dewatering may strand fish that were not captured and cause stress or death during the construction period. However, due to timing of construction, mortalities due to dewatering activities are anticipated to be minor.

Vegetation removal in riparian areas would be minimal but would result in a temporary loss of cover for fish and loss of shade for maintaining low stream temperatures in small isolated sections of the project corridor. Stream temperatures might increase slightly from the temporary loss of the relatively small amount of vegetation within the project corridor. However, effects of slight temperature rise on fish would be negligible, unless the stream temperatures are already high enough to affect fish reproduction. Only a few streams along the project corridor have elevated stream temperatures.

Sedimentation and gravel from construction activities can adversely affect fish species. A description of potential adverse effects on fish species is provided under the threatened and endangered species analysis section for bull trout. Sedimentation would be minimized by BMPs and conservation measures.

Mitigation Measures

- In areas where the project would potentially affect the bed or banks of streams conditions specified by USFWS, and USACE would be met.
- Instream work would generally be conducted from July through October (low-flow season); timing would vary to meet current USFWS and WDFW allowable work windows for hydraulic projects and to accommodate other listed species.
- Excess material (spoils) would be disposed of in a site approved by WFLHD to prevent entry to stream channels or other water bodies.
- If placement of large woody debris is undertaken, it would be conducted in coordination with the Forest Service, USACE, and USFWS.

More conservation measures were extracted from those specified in the NOAA Fisheries (2003b) biological opinion regarding culvert replacement on Forest Service land. These measures would be implemented for the Camp Grisdale Road project. More detailed conservation measures are described in the biological assessment for this project (Herrera 2005c).

- Work below bankfull elevation would be completed during the USFWS-specified in-water work window of July 15 through October 15.

- In-water work would not be initiated or continued in any project area where adult fish are spawning, where spawning is imminent, or where redds are present and in-water work would displace spawning or prespawning adults from spawning areas, or where disruption or dewatering of active redds is likely, as determined by an experienced fisheries biologist.
- Fish exclusion protocols from in-water work areas in accordance with USFWS, and WDFW protocols would be followed.
- Fish handling and transfer protocols specified by USFWS and WDFW would be followed.
- A stormwater pollution prevention plan and oil spill prevention plan would be developed for the proposed project that includes methods and measures to minimize erosion and sedimentation associated with the project. The plan elements shall be in place before and at all times during the appropriate construction phases. The plan should include measures addressing water quality; spill prevention control and containment; site preparation; heavy equipment usage; earthmoving; temporary stream crossings; dewatering; flow reintroduction; and site restoration. Sediment barriers would be placed around disturbed sites to prevent erosion and sedimentation associated with equipment and material storage sites, fueling operations, and staging areas from entering the stream directly, through natural drainage or road side ditches.
- Turbidity and suspended sediment criteria based on water quality standards of the state of Washington (or other appropriate criteria) would be established. Temporary erosion and sediment control measures would be sufficient to confine water quality impacts within the limits established in the Washington Department of Ecology and WSDOT (1998) implementing agreement (i.e., 100 to 300 feet downstream of the disturbance).
- Boundaries of clearing limits associated with site access, riparian crossings, stream crossings, and staging and stockpile areas would be flagged to minimize overall disturbance and disturbance to critical vegetation.
- Staging areas (used for construction equipment storage, vehicle storage, fueling, servicing, etc.) would be established along existing roadways or turnouts beyond the 100-year floodplain area in a location and manner that precludes erosion into or contamination of the stream or floodplain.
- Clearing and grubbing activities required for preparation of staging or stockpile areas would be minimized. Stockpiling large wood, trees,

riparian vegetation, other vegetation, sand, and topsoil removed for establishment of staging areas for site restoration would be minimized and placed outside critical areas.

- Sediment barriers would be placed around disturbed sites to prevent erosion and sedimentation associated with equipment and material storage sites, fueling operations, and staging areas from entering the stream directly, through natural drainage or road side ditches.
- Erosion controls would be monitored and maintained until site restoration is complete.
- If monitoring or inspection shows that the erosion controls are ineffective, work crews would be mobilized immediately to make repairs, install replacements, or install additional controls as necessary.
- Fuel or oil leakage from construction equipment into the stream channel and floodplain would be prohibited.
- Construction impact areas would be delineated on project plans and work would be confined to the noted area. Construction impacts would be confined to the minimum area necessary to complete the project.
- Native streambed materials would be conserved above the bankfull elevation for later use in project restoration. To prevent contamination from fine soils, these materials would be kept separate from other stockpiled material that is not native to the streambed.
- Sedimentation of streams would be minimized during dewatering activities with methods such as use of diversion ponds where sediment can settle out of water prior to being returned to the stream. Flow at the outfall of the bypass system would be dissipated to diffuse erosive energy of the flow.

Threatened and Endangered Species

Fish and Fish Habitat

Bull Trout

Impacts—Effects on potential bull trout habitat include increased sedimentation, dewatering of stream habitat at road crossings, vegetation removal within riparian areas in the project corridor. Temporary sedimentation of streams during construction that contain potential habitat for bull trout would occur. This might result in minor degradation of spawning habitat where it exists within the project corridor due to sediment filling the spaces between spawning gravels. Construction impacts are short-term. Replacement of culverts during the dry summer season (June 1 to September 30) and use of BMPs would reduce temporary sedimentation in streams

and adjacent wetlands during construction. A negligible amount of sediment from construction would reach the Wynoochee River, which has been designated as critical habitat for bull trout. This is because the tributaries to the Wynoochee River that cross the alignment are between 0.5 mile and 2 miles from the Wynoochee River and they contain riffle/pool habitat and steep cascade habitat that settles out sediment as water travels downstream.

Dewatering during culvert replacement could have impacts on bull trout, but they are not expected to be present in the streams. They have not been observed in streams that cross the alignment, but not all streams have been surveyed. These impacts are very unlikely to occur since bull trout are generally believed to be absent from the streams that cross the project corridor.

Vegetation removal during culvert replacements is expected to be minimal in riparian areas, but it might be necessary to temporarily remove vegetation that now provides cover for fish and shading that lowers stream temperatures. Removal of vegetation leaves fish more open to predation. Stream temperatures might increase slightly from the temporary loss of the relatively small amount of vegetation within the project corridor, but effects of slight temperature rise on fish would be negligible, unless the stream temperatures are already high enough to affect fish reproduction.

Conservation Measures—Conservation measures described under the fish and fish habitat section also apply to bull trout.

Marbled Murrelet

Impacts—Noise can cause injury to nesting and roosting birds if they are within a disturbance distance and the noise is 92 decibels (dB) or greater. Ambient noise levels within the relatively undisturbed Olympic National Forest portion of the project was estimated by USFWS (2003b) to approximate an average of 40 dB. Table 5-2 provides approximate decibel levels of construction-related activities.

Table 5-2. Maximum sound levels for construction activities and equipment.

Type of Activity or Equipment	Maximum Sound Levels at 50 Feet ^a
Impact pile driver	106 dB (peak)
Jackhammer, rock drill	Range 82–97 dB
Heavy equipment, motorized tools	Range 72–96 dB
Chainsaw	104 dB

^a Source: Canter (1977), cited in USFWS (2003).

According to the USFWS (2003b) biological opinion, noise within the injury threshold distances provided in Table 5-3 *would* cause injury if they occur during the early breeding season (April 1 to August 5). Activities occurring within the injury threshold distances during the late breeding season (August 6 to September 15), *may* cause injury to marbled murrelet.

Table 5-3. Sound-only injury threshold distances for construction and timber harvesting activities for marbled murrelet.

Activity or Equipment	Combined Injury Threshold Distances for Murrelet ^a
A blast larger than 2 pounds	1 mile
A blast of 2 pounds or less	120 yards
An impact pile driver, a jackhammer, a rock drill	60 yards
A helicopter or single-engine airplane	120 yards
Chainsaws (firewood cutting, hazard trees, pre-commercial thinning, and commercial thinning)	45 yards
Heavy equipment	35 yards

^a Source: USFWS (2003).

The effects of noise vary with the distance from the sound, climatic conditions, topography, and presence of dense vegetation. Noises that are close enough to marbled murrelets can cause flushing, stress to birds, postponement or disruption of feeding, and nesting disruption or failure. Murrelet nesting begins in April and may last through mid-September. Murrelet eggs rely on the adult murrelet for incubation and protection from weather and predation. After hatching, the juvenile relies on the adults for feeding, spending most of the day by itself. The majority, but not all, feedings occur during the period between 2 hours before sunset and 2 hours after sunrise.

Project activities that produce loud noises during the early nesting season (April 1 to August 5) and between 2 hours before sunset and 2 hours after sunrise are likely to adversely affect murrelets if adults are flushed from the nest or abort a feeding attempt. When murrelets fledge, usually in September, they fly directly to the ocean where noise from the proposed action would have no effect. Nesting birds that are outside the injury threshold distances in Table 5-3 will not be affected by noise.

Additionally, noise impacts might affect nesting of marbled murrelet in edge habitat where it has already been found to have poor nesting success due to disturbance. Nelson and Hamer (1995) reported that successful nests were located significantly farther from forest edges than those that failed. All successful nests were located at least 60 yards from an edge (mean = 181 yards), other than the Nemah nest in Washington that was located only 33 feet from an old road near the center of a 351-acre (142-hectare) forest. These data suggest that although murrelets may nest close to forest edges (such as would be found associated with the proposed action) their reproductive success is low in areas that are less than or equal to 60 yards from the edge. Therefore, noise is only one of several contributing factors to poor nesting success at the forest edge. Murrelets are less likely to nest at the forest edge within the noise injury threshold distances. Noise impacts are expected to be minor, if work is limited to 2 hours after sunrise and 2 hours before sunrise and during USFWS-specified seasons.

Additionally there is a site-only injury threshold distance of 11 yards for marbled murrelets (USFWS 2003b). If human presence or activities occur within this distance of a marbled murrelet nest, this may cause effects similar to the sound-only thresholds (flushing, interruption

of nesting and feeding, or abandonment of nests). It is unlikely that marbled murrelet nests will be in site distance of humans during project construction.

Conservation Measures—Survey for marbled murrelet would be conducted each year for 2 years prior to commencement of construction in marbled murrelet habitat. The conservation measures below are extracted from those specified by USFWS (2003b) in the biological opinion regarding effects of Olympic National Forest program activities on northern spotted owl, marbled murrelet, and bald eagle. These program activities include road building. More details regarding conservation measures for marbled murrelet are provided in the biological assessment for this project (Herrera 2005c).

General Conservation Measures

- During the marbled murrelet nesting season (April 1 to September 15), all activities that are within disturbance distance and that generate noise above 92 dB would be scheduled between 2 hours after sunrise and 2 hours before sunset.

Measures for Habitat Removal

- When feasible, harvesting of trees from within 300 feet of suitable murrelet habitat would be avoided or minimized.
- Clearing of critical habitat would occur outside the full nesting period.

Measures for Handling Individual Trees

- Known occupied murrelet nest trees would not be removed.
- If hazard trees or potential nest trees are to be removed within suitable murrelet habitat during the early breeding season (April 1 to August 5) on Forest Service land, review by a Forest Service wildlife biologist would be required.
- When feasible, the number of large conifers (greater than or equal to 21 inches dbh) removed would be minimized. Trees would be felled in a manner to minimize impacts on surrounding trees and away from suitable habitat, if it is possible and safe to do so.
- When feasible, the removal of platforms, trees with platforms, and trees providing cover to platforms would be avoided or minimized even if the stand is currently unoccupied by murrelets.
- On Forest Service land, proposed removal of any tree larger than 36 inches dbh within marbled murrelet nesting habitat would require review by a Forest Service wildlife biologist.

Measures for Handling Active Nests

- If an active marbled murrelet nest is found on Forest Service land, a Forest Service wildlife biologist would be notified immediately. All construction activities that create noises of 92 decibels and above (Table 5-2) and are within the injury threshold distances (Table 5-3) are prohibited during the early nesting season (April 1 to August 5).

Measures for Ground-Level Disturbance

- Habitat or nest sites would be avoided to the extent possible in the final design.
- Where murrelet nests are located, construction would occur during breeding season but only between 2 hours after sunrise and 2 hours before sunset.

The USFWS Biological Opinion dated October 2006 offers the following conservation recommendations during construction of the project:

“Batch plants and staging areas for machinery and materials required for road construction should be located at least 45 yd from suitable murrelet habitat throughout the year.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.”

Northern Spotted Owl

Impacts—Similar to marbled murrelets, noise can cause injury to nesting and roosting northern spotted owls and other birds, if they are within a disturbance distance and the noise is 92 dB or greater. However, during 2004 and 2005 surveys, no northern spotted owl were observed within 0.5 mile of the project corridor (surveys are valid for a 2-year period). Ambient noise levels within the relatively undisturbed Olympic National Forest portion of the project was estimated by USFWS (2003b) to be approximately an average of 40 dB. Table 5-2 provides approximate decibel levels of construction-related activities.

Noises that are within the injury threshold distances can cause flushing, stress to birds, postponement or disruption of feeding, and nesting disruption or failure. The USFWS (2003b) has determined the threshold distances at which northern spotted owls are affected by various construction and timber harvesting activity noises. Table 5-4 provides the sound-only injury thresholds. Since northern spotted owls are not likely to be present, noise impacts are expected to be minor or non-existent.

Table 5-4. Sound-only injury threshold distances for construction and timber harvesting activities for northern spotted owls.

Activity or Equipment	Combined Injury Threshold Distances for Northern Spotted Owl ^a
A blast larger than 2 pounds	1 mile
A blast of 2 pounds or less	120 yards
An impact pile driver, a jackhammer, a rock drill	60 yards
A helicopter or single-engine airplane	120 yards
Chainsaws (firewood cutting, hazard trees, precommercial thinning, and commercial thinning)	65 yards
Heavy equipment, motorized tools	35 yards

^a Source: USFWS (2003).

Additionally, there is a sight-only injury threshold distance of 20 yards for northern spotted owls. If human presence or activities occur within this distance, this may cause effects similar to the sound-only thresholds (flushing, interruption of nesting and feeding, or abandonment of nests). However, northern spotted owls are highly unlikely to be within sight distance of the construction activities.

Conservation Measures—More detailed conservation measures for northern spotted owl are provided in the biological assessment prepared for the project (Herrera 2005c).

- The removal or disturbance of suitable and dispersal habitat would be minimized.
- Clearing of suitable habitat would occur outside the full nesting period.
- Damage to potential northern spotted owl nesting trees adjacent to the project would be minimized.
- Disturbance related to human presence and activities would be minimized by confining construction activities to daylight hours when owls are less active in areas that are within 3 miles of suitable habitat sites.
- Project activities within sound-only injury threshold distances to northern spotted owl suitable habitat would be restricted to outside the early breeding season (March 1 to July 15). Also, where feasible, activities listed in Table 5-4 would be limited to distances beyond the injury threshold distances.

USFWS (2003b) specifies the following additional conservation measures in the biological opinion regarding effects of Olympic National Forest program activities on northern spotted owl, marbled murrelet, and bald eagle.

Measures for Handling Individual Trees

- If a northern spotted owl nest tree is found in the project corridor, it would not be removed.
- On Forest Service land, if hazard tree removal or potential nest tree removal is to be done within suitable owl habitat during the northern spotted owl early breeding season (March 1 to July 15), review by a Forest Service wildlife biologist would be required.
- On Forest Service land, any removal of dispersal habitat within northern spotted owl designated critical habitat would require review by a Forest Service biologist.
- On Forest Service land, any proposed removal of any tree larger than 36 inches dbh within suitable northern spotted owl habitat would require review by a Forest Service wildlife biologist.

Measures for Active Nests

- If an active northern spotted owl nest is found on Forest Service land, a Forest Service wildlife biologist would be notified immediately. All construction activities that create noises of 92 decibels and above (Table 5-2) and are within the injury threshold distances (Table 5-4) would be prohibited during the early nesting season (March 1 to July 15).

Bald Eagle

Impacts—Impacts due to noise would be somewhat similar to those described for marbled murrelet. Bald eagles appear to acclimate to traffic noise and are more tolerant of auditory disturbances when the sources are partially or totally concealed from view (Stalmaster and Newman 1979). Wintering bald eagles are considered less sensitive to human disturbance than are nesting eagles; however, they avoid areas with heavy human activity. Eagle sensitivity appears greatest during feeding. The USFWS (2003b) has determined the threshold distances at which bald eagle are affected by various construction and timber harvesting activity-related noises. Table 5-5 provides the sound and site injury thresholds estimated for bald eagle. Since eagles are not known to nest within 1 mile of the project corridor and may only perch within the project corridor, noise impacts are unlikely to affect reproduction of eagles. Perching eagles are likely to be temporarily affected by noise, if the noise source is within the injury threshold distances. Noise impacts to eagles are expected to be minor or negligible, since they would only be within the project corridor infrequently.

Table 5-5. Sound-only injury threshold distances for construction and timber harvesting activities for bald eagle.

Activity or Equipment	Combined Injury Threshold Distances for Bald Eagle ^a
A blast larger than 2 pounds	1 mile
A blast of 2 pounds or less	1 mile
An impact pile driver, a jackhammer, a rock drill	0.25 miles
A helicopter or single-engine airplane	1 mile
Heavy equipment, motorized tools	0.25 miles not in line-of-sight or 0.5 miles within line-of-sight

^a Source: USFWS (2003).

Conservation Measures—The following conservation measures were derived from the biological opinion for Olympic National Forest program activities (USFWS 2003b). More detailed conservation measures for bald eagle are provided in the biological assessment for this project (Herrera 2005c).

Measures for Handling Individual Trees

- When feasible, the number of large conifers (greater than or equal to 21 inches dbh) removed would be minimized. Trees would be felled in a manner to minimize impacts to surrounding trees and away from potential roosting or nesting habitat, if it is possible and safe to do so.
- On Forest Service land, any proposed removal of any tree larger than 36 inches dbh within a bald eagle use area would require review by an Forest Service wildlife biologist.

Measures for Active Nests

- If an active bald eagle nest is found on Forest Service land, a Forest Service wildlife biologist would be notified immediately.

Land Use

Impacts

Recreational use of land accessed by the road would be reduced during construction, although the extent of reduction is not known. Minor impacts to land use would result if a material source for the proposed project is identified and utilized in the project area. It is likely that these impacts would be temporary and would revert to previous land use conditions upon completion of the project.

Socioeconomics

Impacts

During construction, roadway users (primarily tourist vehicles and logging trucks) would be affected by road closure. Residents near the Tacoma Power Wynoochee River Project would also be inconvenienced during construction.

Mitigation Measures

Project communication and coordination would be maintained with the Forest Service and the Green Diamond Resource Company, so that project construction impacts to Forest Service projects, Green Diamond Resource Company logging operations, and Tacoma Power operations can be reduced or avoided. Construction closures could be limited, if recreational impacts are found to be substantial.

Environmental Justice

Impacts

Construction would have no disproportionate impacts on minority or low-income populations.

Public Services and Utilities

Impacts

Under the preferred alternative, temporary road closures or delays could occur during construction. Traffic control during construction is addressed in the section below on construction traffic, delays, and detours. Emergency service providers would need to develop contingency plans in coordination with the construction contractors to reduce response time delays during construction. Emergency vehicles would be allowed through the project corridor as the need arises during construction. Tacoma Power and Light utilities would not be impacted by the project, but employees could experience inconvenient access.

Mitigation Measures

Potential mitigation measures for impacts on public services and utilities include the following:

- Anticipated road closures or schedules during construction would be coordinated with the Grays Harbor County Fire Department, the Olympic National Forest fire crews, the Washington State Patrol, and the Grays Harbor County Sheriff's Office to ensure that reliable emergency access is maintained and that alternative plans or routes are available (where possible) to avoid substantial delays in response time.

Scenery and Aesthetics

Impacts

The proposed roadway improvements would result in temporary construction-related visual impacts. During construction, the visual quality of the project corridor may be compromised for both viewers of the road and viewers from the road. Adverse visual impacts on areas adjacent to the project corridor would result from the following elements of construction:

- Traffic congestion in areas of active construction
- Presence of construction vehicles and equipment
- Clearing and grading activities resulting in exposed soils (until replanting occurs)
- Erosion control devices such as silt fences and straw bales
- Dust, exhaust, and airborne debris in areas of active construction
- Stockpiles of excavated material
- Staging areas used for equipment storage and construction materials.

Excavation and fill areas along the existing roadway would be visibly evident during construction, although no views would be permanently blocked or obscured. Several newly constructed fill slopes would be visible from a greater distance until the exposed soil and fill surfaces are revegetated.

Construction staging areas typically contrast strongly with their forested surroundings, and use of these areas could result in adverse aesthetic impacts during and after construction, unless the areas are carefully chosen, prepared, and subsequently revegetated. If existing borrow and source material sites are used, visual impacts at these sites would generally be modest, and many of the visual problems described above would be avoided.

Mitigation Measures

The mitigation measures proposed for potential aesthetic impacts during construction include the following:

- During grading and excavation, cut lines into slopes would be contoured at the clearing limits as feasible to help soften the visual effect of clearing vegetation from the right-of-way.
- Roadside clear zones would be limited to the minimum size necessary to provide adequate visibility for safety.

Recreation

Impacts

Traffic control through the construction zone would inconvenience recreational travelers during the construction season (spring through fall) but would not preclude existing recreational opportunities.

Adverse impacts to recreation would also include construction equipment and construction-related noise encroaching on, wildlife viewing areas, hunting and fishing areas, and local campgrounds. Construction-related economic impacts to local campgrounds are not anticipated, because use is already heavy.

Depending on the locations of road-building material source sites, site operations, and truck hauling might temporarily reduce the quality of recreational experience in nearby areas.

Adequate signage would be installed to direct recreational travelers through construction areas to recreational facilities. Construction staging areas would be located as far from recreation areas and facilities as feasible.

Mitigation Measures

The mitigation measures proposed for potential impacts on recreation during construction include the following:

- Construction staging areas would be located as far from recreation areas and facilities as feasible.
- Adequate signage would be installed to direct recreational travelers through construction areas to recreational facilities.

Air Quality

Impacts

Construction activities would result in minor, short-term emissions of dust and diesel exhaust from heavy equipment and trucks during work hours on weekdays. Paving would produce brief, minor asphalt odors. Airborne dust would be controlled by periodically using dust suppression methods on exposed soils in haul route areas. Exhaust emissions and asphalt odors would dissipate rapidly.

The southernmost campsite at Coho Campground is located 0.3 mile north of the northern project terminus. The Wynoochee River Project day use picnic area is located 0.2 mile from the terminus, and the Wynoochee River Project boat ramp is located 0.5 mile away. Visitors using these recreational facilities might detect odors from asphalt and diesel-powered equipment. No permanent adverse construction-related air quality impacts would be expected to result from construction.

Mitigation Measures

The mitigation measures for potential impacts on air quality during construction include the following:

- Airborne dust would be controlled using dust suppression methods.

Noise

Impacts

Construction noise sources for the preferred alternative include earth-moving equipment, generators and compressors, trucks, and impact equipment. Construction noise would be temporary and limited to the duration of the project which is expected to occur from June to September over three to five years. The severity of noise impacts from construction would depend on the type, amount, and location of construction activities and the presence of noise-sensitive receptors. The U.S. EPA (1971) estimates that maximum noise levels from construction activities at 50 feet range from 69 to 106 decibels, and at 200 feet range from 57 to 94 decibels. There are no human receptors in close proximity to the project. Construction activity and resulting noise impacts at any particular location in the Camp Grisdale project corridor would occur for a period of several weeks to more than 1 month.

Operation of material source sites for gravel extraction would result in noise-related indirect impacts. While the material source sites for the proposed project have not been identified, these materials are normally extracted as near as possible to the project site. Traffic to and from material source sites, in addition to the heavy machinery required to extract materials, would have noise-related impacts similar to those described for direct construction-related impacts. There are no human receptors in close proximity to the project. Blasting would not be required for road construction.

Mitigation Measures

The mitigation measures for potential noise impacts during construction include the following:

- Construction equipment mufflers would be maintained.

Hazardous Materials

Impacts

Potential short-term impacts could result from the use of hazardous materials (lubricants, fuels, solvents, etc.) during construction of the preferred alternative; the likelihood of impacts (releases) from construction activities is low. A site-specific oil spill prevention plan or pollution control plan would be prepared to manage any hazardous materials used in construction. While no sites have been identified in or adjacent to the project corridor, project construction could encounter undocumented sites with existing soil or ground water contamination. If contaminated soil or water is encountered, work would cease and

contaminants at the site would be addressed. Appropriate measures to minimize further contamination would be undertaken.

There are no known contaminated sites that would be affected by this project.

Mitigation Measures

The following mitigation measures would be implemented for the preferred action alternative:

- A site-specific oil spill prevention plan or pollution control plan would be prepared to manage any hazardous materials used in construction.

Natural Resources and Energy

The source of aggregate to produce pavement has not yet been identified. Both grading and paving would use fossil fuel energy sources, but this use is not considered substantial. Energy impacts relate to the energy consumed by vehicles and equipment used in construction and the long-term usage of the improved road.

The preferred alternative would consume more energy over the short term than the no-action alternative, through road construction activities and workers traveling to and from the work site. Grading and paving would use fossil fuel energy sources, although this use is not considered substantial.

Staging, Borrow, and Waste Areas

All staging, borrow, and waste areas selected by the contractor related to this project would either be from existing commercial sources or non-commercial sources. Should a non-commercial source be selected, use of this area (a) will not affect properties on or eligible for listing to the National Register of Historic Places; (b) will have no effect on species or habitat listed as threatened or endangered under the Endangered Species Act (ESA), and (c) will not encroach into waters of the U.S. or wetlands protected under Executive Order 11990.

Construction Traffic, Delays, and Detours

Existing and projected traffic volumes are discussed in Chapter 2, Purpose and Need.

Construction activities would result in road closures and inconvenience for the users of Camp Grisdale Road. The affected population would include persons using national forest lands along the roadway for commercial and recreational purposes, logging truck operators, and employees at the Tacoma Power Wynoochee River Project and fish collection facility. Additional impacts on motorists would result from the poor road conditions and road roughness during construction. In addition, truck traffic along all segments of the roadway would increase as construction materials are hauled to and from material source and disposal sites.

Mitigation Measures

The following mitigation measures would minimize traffic impacts during construction:

- A traffic control plan would be developed before construction. It would be coordinated with roadway users.
- The road would be closed Tuesday through Thursday and open Friday through Monday. The road would be open Memorial and Labor Day weekends and July Fourth week.
- A public information plan would be prepared and implemented to warn motorists in advance of construction activity and road closures.
- Work zone signage would be installed.
- Work zone signage would be removed when construction is complete.
- Notification and coordination with regular users, such as Tacoma Power and Green Diamond Resource Company, of Camp Grisdale Road would be ongoing during construction.

Cumulative Effects

A cumulative effect is *“the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time”* (40 CFR 1508.7).

Past, Present, and Future Actions

Past actions considered in the cumulative impact analysis that have contributed, in general, to the present environmental conditions in the project area include road development, a completed project on Wynoochee Valley Road that corrected two curves, timber production, timber harvesting, and a dam and hydroelectric plant were constructed on the Wynoochee River upstream of the proposed project. These activities have had the most substantial effects on wetlands, streams, and wildlife habitat. These past actions have resulted in the loss of riparian vegetation, erosion of stream banks, decreases in streamflows, loss of native grasslands, introduction of nonnative and noxious weeds, and fragmentation of habitat. In addition, past road development has affected wetland and stream hydrology and decreased water quality due to untreated roadway runoff. For the most part, past road development has not resulted in adverse effects on the visual quality of the project area. Present actions considered in this cumulative impact analysis include logging operations.

Reasonably foreseeable future actions considered in this cumulative impact analysis include continued logging on private land, and a curve realignment proposed on Wynoochee Valley Road at MP 4.5. Environmental analysis for a future project on Wynoochee Valley Road has been completed. The US Forest Service has no development planned in the Wynoochee watershed; however, timber harvesting will continue on private lands.

Analysis of Cumulative Effects

The potential cumulative effects resulting from the incremental effects of the proposed action alternatives when added to other past, present, and future actions are described below. The preferred alternative is not expected to contribute to cumulative effects on the following resources, for these reasons:

- No cumulative effects on floodplains are anticipated because culverts would transport water under the road and there would be no loss of floodplain capacity.
- No cumulative effects on land use are anticipated, because the majority of the project corridor is expected to remain in timber production for the foreseeable future, and because the majority of the activity would occur within the existing route.
- Because a low percentage of minority racial or ethnic residents live in the project area, these groups would not suffer disproportionately from the project. The project would not cause any cumulative impact on minority or low-income populations.
- The proposed reconstruction of Camp Grisdale Road, along with past roadway projects and logging activity, would not contribute to cumulative losses of historic resources in this area. Other present and future logging and road-building activities may contribute to cumulative losses of physical evidence of cultural or historic sites in this area.
- Air quality is excellent and ambient noise levels are low in the project area, so that air quality and noise are not likely to become issues of concern. The project would not result in increased traffic levels beyond those predicted for expected regional growth; therefore, this project is not expected to contribute to cumulative impacts on air quality or noise in the project area.
- The proposed action alternative is not expected to contribute to cumulative effects on noise. The project would not result in increased traffic levels beyond those predicted for expected regional growth.

- Past actions, future actions, and the proposed project are not expected to contribute to cumulative impacts from hazardous materials in the project corridor because there are no known or documented facilities within the project corridor.
- The proposed action has little if any potential for resulting in cumulative energy impacts. Construction activities would consume energy, but vehicles may move with more constant speed on the proposed paved road than on the existing gravel road, thereby using fuel more efficiently. No major changes in vehicle usage are expected to result from the proposed action; therefore no substantial increase in fuel use is expected after construction.

Geology and Soils

Construction of the proposed road project and exposure of cut slopes and development of material source sites would contribute to temporary incremental cumulative effects on geology and soils, such as erosion and topographical modifications. Ongoing logging on private land would continue to contribute to erosion of soils and topographical modifications.

The completed Wynoochee Valley Road project involved disturbance of soils, and the proposed Camp Grisdale Road project would do so as well, resulting in a minor cumulative effect. Soils on the future Wynoochee Valley Road project would be temporarily disturbed. All soils would stabilize in the long term and would result in a minor cumulative adverse impact.

Water Resources

The geographic area considered for the analysis of cumulative effects on water resources includes the Wynoochee River watershed, which supports water quality and resources in the project corridor. Past and ongoing activities with effects on water resources include logging, development, agriculture, and road construction. These actions have resulted in the erosion of stream banks, decrease in infiltration of stormwater, and decreases in water quality in streams within the watershed including those that cross the proposed project corridor.

The U.S. Army Corps of Engineers constructed the Wynoochee Lake dam in 1972 for flood control, water supply, fishery enhancement, and recreation. Hydropower facilities were installed in 1987 at the northern terminus of the project corridor. Variable flows and pulses of water within the Wynoochee River have altered the geomorphology of the stream and caused erosion of stream banks (USACE 2004). Sedimentation in the stream has impaired water quality and affected the available oxygen in the stream.

The Forest Service plans to continue road maintenance within the Olympic National Forest, but no new road development is anticipated in the Wynoochee River watershed.

The completed Wynoochee Valley Road project had negligible water quality impacts as would the future Wynoochee Valley Road project.

Construction of the proposed road project would increase the area of impervious surface within the Wynoochee River watershed. This impervious surface will reduce erosion and decrease water- and airborne sediments.

Collectively, past actions led to the degraded state of water quality that currently exists in the project area. The past actions include logging and construction of the aggregate road, both of which have contributed to sediment generation that creates turbidity in water bodies along the project corridor. The proposed Action Alternative would correct some of the road deficiencies that may have contributed to water quality degradation.

Wetlands

The geographic area considered for the analysis of cumulative effects on wetlands includes the entire Wynoochee River watershed. Past and ongoing activities with effects on wetlands include logging, residential development, agriculture, and road construction.

The Camp Grisdale Road project is expected to result in the permanent disturbance of 1.4 acres of wetlands and the temporary disturbance of 0.6 acre of wetlands. The wetland impact is small compared to the 4,900 acres of palustrine wetlands within the Wynoochee River watershed, and wetland losses would be mitigated by creation of 2.8 acres of new wetland, and preservation of 5.1 acres of existing wetland. The completed Wynoochee project disturbed 0.3 acre of and created 0.6 acre of new wetland. The future Wynoochee Valley Road project would not disturb wetland. The wetlands in the Wynoochee River watershed are not vulnerable to incremental impacts because the region's climate and the existing hydrology support rapid wetland development and recovery. When added to past, present, and future impacts in the Wynoochee River watershed, this project will not affect the ability of the resource to sustain itself or function as a watershed.

Vegetation

The geographic area considered for the analysis of cumulative effects on vegetation includes the area within contiguous vegetation communities (or habitat units) that extend from the project corridor. Mitigation measures taken during construction would inhibit noxious weed growth, so this project is not expected to add to existing noxious weeds in the Wynoochee watershed. Past and ongoing activities with effects on vegetation include logging, development, agriculture, and road construction. The loss of forest and wetland habitat due to past, present, and future activities within the vicinity of the project area have resulted in changes to the species and structural composition of the vegetation communities within the vicinity of the project corridor.

The completed Wynoochee Valley Road project removed vegetation that was mitigated by seeding disturbed areas. The future Wynoochee Road project would remove a small amount of residential landscape plant material. Approximately 23.5 acres of forest vegetation would also be removed for the proposed Camp Grisdale Road project. Removal of 23.5 acres of forest vegetation when added to past, present, and future activities would result in minor adverse

cumulative impacts to vegetation communities. The proposed project when added to past and future projects would not further alter species and structural composition of vegetation communities.

Wildlife

The geographic area considered for the analysis of cumulative effects on wildlife habitat includes the area within the home range for species likely to occur in the project corridor. Past and ongoing activities with effects on wildlife habitat include logging, development, agriculture, and road construction. These activities result in cleared and fragmented habitat areas.

A small amount of habitat was removed for the completed Wynoochee Valley Road project. Wildlife using the habitat would relocate. Approximately 19.8 acres of habitat would be removed for the proposed Camp Grisdale Road project, of which only 0.83 acre is late successional reserve habitat. The project would clear only 0.0007 percent of the 162,700-acre old growth forest habitat unit that is within the vicinity of the project corridor. Also there are approximately 800 square miles of forest habitat within the upper Wynoochee River watershed (Ecology 1996). The completed Wynoochee Valley Road project removed a small amount of habitat. The future Wynoochee Valley Road project would remove residential vegetation that is minimal habitat. The road projects cumulative impact on area wildlife would be minimal. The wildlife impacts of the proposed project, when added to other past, present, and future projects would not further alter wildlife foraging or dispersal.

Fish and Fish Habitat

The geographic area considered for the analysis of cumulative effects on fish and fish habitat includes the entire Wynoochee River watershed, which support fish and fish habitat in the project corridor. Past and ongoing activities with effects on fish and fish habitat include logging, development, agriculture, and road construction. Over many years, these actions have resulted in the erosion of stream banks, decrease in infiltration of stormwater, and decreases in water quality that have affected fish habitat. Stream cleaning of woody debris has also disturbed fish habitat in the Chehalis and Wynoochee rivers (Chehalis River Council 1992).

Tacoma Power constructed a dam at the northern terminus of the project corridor, which regulates water flow in the Wynoochee River, blocking fish passage above the dam and resulting in mortality of smolts (USACE 2004). Tacoma Power transports anadromous fishes upstream of the dam during migration periods, which assists fish migration but can cause stress, impairment of the reproduction process, and possibly mortality. Water is released in pulses from the dam, which has increased high peak flows and decreased low flows, resulting in degradation of cover and spawning habitat for fish. The Corps of Engineers and Tacoma Power are working on a fish restoration project to provide a constructed fish bypass of the dam. Together with fish passages added by the Camp Grisdale Road project, fish habitat in the area would improve. No fish habitat was affected by the completed Wynoochee Valley Road project. No fish habitat would be affected by the proposed Wynoochee Valley Road project.

Threatened and Endangered Species

Fish and Fish Habitat

The cumulative effects of past, present, and future activities on bull trout are the same as those mentioned in the cumulative effects section for fish and fish habitat. Planned projects such as fish habitat restoration at the Wynoochee Lake dam and culvert replacement with fish-passable culverts may contribute to the recovery of the threatened and endangered species.

The completed Wynoochee Valley Road project and the future Wynoochee Valley Road did not and would not affect endangered or threatened fish species or fish habitat. The Camp Grisdale Road project would improve fish passage and would restore fish habitat. The proposed project would improve water quality, although in combination with past and future projects, the cumulative impacts would be small.

Wildlife

The cumulative effects of past, present, and future activities on threatened and endangered wildlife species (marbled murrelet, northern spotted owl, and bald eagle) are similar to those mentioned in the cumulative effects section for wildlife habitat.

A decrease in old-growth habitat has already occurred and in recent years has declined. Also, the Forest Service prohibits cutting in late successional reserves, which provide critical habitat for marble murrelet and important nesting and roosting habitat for northern spotted owl and bald eagle. The historic loss of old-growth has caused a decline in marbled murrelet and northern spotted owl populations. The presence of barred owl has also contributed to the decline of northern spotted owl populations.

The completed Wynoochee Valley Road project did not affect threatened or endangered wildlife. The future Wynoochee Valley Road project would not affect threatened or endangered wildlife.

The amount of late successional forest disturbed by the proposed Camp Grisdale Road project is small (0.83 acre) compared to the area of late successional forest within 0.5 mile of either side of the road (325 acres), and is small in comparison to that removed by other activities in the area. Only 16 large trees (greater than 21 inches dbh) potentially would be felled or damaged during construction of the proposed project. The 0.83-acre of habitat clearing is a relatively minor impact compared to the 162,700 acres of a suitable habitat (critical habitat for marbled murrelet). These impacts when combined with other past, present, and future actions will not affect the continued existence or sustainability of marbled murrelets, bald eagle, and northern spotted owls and their habitat. The wildlife impacts of the proposed project, when added to other past, present, and future projects would not further alter wildlife foraging or dispersal.

Socioeconomics

Past actions that have generally contributed to the present socioeconomic conditions in the project vicinity include road development, residential development, farming, logging, and

business development. Past development within the project corridor has been limited to logging and road building. Improvement of Camp Grisdale Road, together with these past actions, is not expected to result in a cumulative effect on socioeconomic conditions, because the 17.5-mile improved road is not expected to draw large numbers of visitors or economic development.

Neither the completed Wynoochee Valley Road project, the future Wynoochee Valley Road project, nor the Camp Grisdale Road project would affect socioeconomics, except for construction money added to the economy. These projects would not result in permanent cumulative impacts to socioeconomics of the area.

Public Services and Utilities

The geographic area of cumulative effects includes the project corridor, recreation areas at the northern end of the project corridor, and public service agencies that serve the area.

Neither the completed Wynoochee Valley Road project, the future Wynoochee Valley Road project, nor the Camp Grisdale Road project would contribute to cumulative impacts on public services and utilities.

Archaeological and Cultural Resources

The proposed reconstruction of Camp Grisdale Road would not contribute to cumulative losses of the evidence of historic resources in this area.

Scenery and Aesthetics

Wynoochee River valley visual landscape has been altered by the dam on the river and associated development, agriculture, residential development, timber harvesting and road construction. Reconstruction of the road will not result in an adverse cumulative impact to the aesthetics of the valley.

Recreation

Campgrounds and recreational opportunities such as hiking exist throughout the Wynoochee River watershed. The road provides direct access to recreational opportunities associated with Tacoma Power's Wynoochee River Project area and the construction of campgrounds, fishing access, and trails. Construction of these recreational opportunities and improvements to them, as well as both the completed Wynoochee Valley Road project and the proposed Camp Grisdale Road, would have the cumulative effect of enhancing recreation in the area. No future recreational facilities in the area are planned for the future. Since the improvements to Camp Grisdale road would provide improved recreational facility infrastructure, it would result in beneficial cumulative effect in conjunction with past and future road projects.

6.0 Summary of Mitigation Measures

Appropriate mitigation measures were selected to minimize direct, indirect, and cumulative effects of the proposed project on natural and cultural elements of the environment. The mitigation measures proposed as part of the Camp Grisdale Road improvement project are discussed in connection with the specific impacts described in Chapter 5 and also are summarized in this section by environmental element.

Geology and Soils

Operational Measures

- Best management practices (BMPs) would be implemented as appropriate during and following construction.
- The slopes would be rounded and contours graded to blend into the surrounding terrain.

Construction Measures

- Slopes would be stabilized as necessary.
- Best management practices (BMPs) would be implemented as appropriate during construction.

Water Resources

Operational Measures

The following mitigation measures would minimize adverse water quality impacts after construction of the improved road:

- Culverts at ARs 9, 11, 19, 27 (Neil Creek), 30a, 30b, and 48 would be replaced with fish-passable culverts that meet the design standards of USFWS and WDFW.
- Culvert at AR 25 (Schafer Creek) would be replaced with a bridge that meets the design standards of USFWS and WDFW.
- The inlets and outlets of all new culverts would be stabilized.
- New bioinfiltration swales would be created to divert stormwater into uplands instead of into wetlands, where feasible.

- Existing infiltration ditches would be widened to increase infiltration of stormwater.
- New bioinfiltration swales that have slopes greater than 4 percent would be rock lined.
- All disturbed soils at stream crossings that are not part of the road would be restored to their original grade and revegetated with native plants.

Construction Measures

The following mitigation measures for construction would minimize adverse water quality impacts during construction along the project corridor.

- A stormwater pollution prevention plan would be prepared prior to construction-related site disturbance, and updated as needed through project completion. The plan could include such measures as using straw bales, rock check dams, slash filter windrows, and silt fences on the perimeter of disturbed areas and in drainage channels to reduce flow velocities and trap sediments in runoff from the construction site. Wherever possible construction site runoff would be discharged to vegetated upland areas, stream channels, or wetlands.
- An oil spill prevention plan that manages toxic materials used in construction would be prepared.
- Land disturbance would be limited to minimize the area of exposed soil at any point in time.
- Staging areas for construction equipment would be located away from stream channels and a barrier would be provided between these areas and the streams. All machinery maintenance involving potential contaminants (fuel, oil, hydraulic fluid, etc.) would occur at a site away from stream channels, water bodies, or wetlands.
- Soil stabilization measures would be implemented in areas that are to be revegetated within 14 days following completion of construction. Appropriate BMPs could include such measures as mulching and reseeded exposed soils, and use of straw bales, rock check dams, slash filter windrows, and silt fences on the perimeter of disturbed areas and in drainage channels, to reduce flow velocities and trap sediments in construction site runoff.
- Equipment use would be restricted in and near stream channels that support fish (see fish and fish habitat section).

- Streamflows and other runoff around culvert construction would be diverted until the new culverts are installed, backfilled in their final positions, and the inlet and outlet areas are stabilized.
- Turbidity of drainage channels or streams would be monitored and additional BMPs would be implemented to effectively control increased sedimentation.

Floodplains

Operational Measures

Mitigation measures for impacts on floodplains are similar to those described in the water resources section, with the addition of the following mitigation measure:

- New culverts would be designed to allow water to flow under the road to maintain the existing hydrology of the floodplain and minimize the amount of fill in the floodplain.

Construction Measures

No construction impacts on floodplains are anticipated; therefore, no mitigation measures are proposed.

Wetlands

Operational Measures

- Wetland impacts would be avoided wherever possible.
- All temporarily disturbed areas would be returned to the existing grade and revegetated with native species indigenous to the area.
- Stormwater systems would be improved as described under the water resources section to reduce sedimentation of wetlands.

As compensation for temporary and permanent impacts on wetlands and streams in the project corridor, the following measures are proposed:

- The removal of existing fill in the riparian areas would total approximately 0.1 acre.
- A wetland mitigation area would be provided at the Neil Creek (AR 27) crossing and realignment area, including wetland creation within the

existing roadway that would be abandoned north of the crossing, and creation of wetlands in recently cleared areas south of the crossing. The mitigation area would total approximately 1.8 acres.

Construction Measures

Impacts on wetlands during construction would be reduced by the following conservation measures and BMPs:

- Prior to construction, the limits of clearing would be marked and erosion control devices (silt fencing, straw bales, and filter bags) would be placed to prevent sediment-laden runoff into the wetlands.
- Vegetation would be cleared only where construction activities occur, thereby minimizing exposed soils and subsequent erosion.
- In-water work would be confined to the period of July 15 through October 15, when salmonids are least likely to be present in the system, as stipulated by USFWS and WDFW.
- All equipment refueling operations would be conducted away from wetlands and streams. An emergency spill containment kit would be located on the construction site, and a spill prevention, control, and countermeasures plan would be implemented to address prevention and cleanup of accidental spills at the site.
- All exposed soils would be stabilized.
- All stockpiles would be stabilized.
- All fill material would be placed behind silt fences to reduce sediment-laden runoff and resultant increases in stream turbidity.
- Water samples from streams crossing Camp Grisdale Road would be collected on a regular basis to monitor turbidity during construction.

Vegetation

Operational Measures

- Revegetation of all temporarily cleared areas would occur as soon as possible after construction is complete. Native species would be planted in areas where vegetation is removed. Restrictions to vegetation removal for threatened and endangered wildlife habitat is covered in the threatened and endangered effects analysis section.

Construction Measures

- The clearing of vegetation would be minimized to reduce effects of spreading noxious weeds that can occur during clearing.
- To prevent importing noxious weeds into the project corridor, construction equipment would be washed prior to entering the construction area.
- Revegetation with native species would occur as soon as possible after construction.

Wildlife

Operational Measures

There are no federal, state, or local regulations that specifically require mitigation for loss of wildlife habitat for unprotected species. However, the measures implemented to protect wetlands, streams, fish habitat, and protected species would also protect other wildlife species and habitat.

- Areas cleared would be limited to those necessary for construction.
- Areas temporarily cleared would be revegetated with native species.
- Conservation measures prescribed under the threatened and endangered species section would also benefit non-special-status wildlife species.
- Mitigation measures listed under the fish and fish habitat section would provide protection for aquatic species (e.g., amphibians) located in adjacent watercourses.
- All standing dead and live trees that need to be removed for road construction or for safety on Olympic National Forest lands would be felled away from the road and left, if possible, to provide habitat for species dependent on downed wood, including terrestrial mollusks.
- Under advisement of WDFW biologists, wildlife crossing signs would be strategically placed in high-use or concentrated wildlife use areas to warn motorists of the potential of animals to cross the road.

Construction Measures

- Conservation measures prescribed under the threatened and endangered species section would also benefit non-special-status wildlife species.

- Mitigation measures listed under the fish and fish habitat section would provide protection for aquatic species located in affected watercourses.
- Areas cleared would be limited to those necessary for construction.
- Trees and brush cleared for road construction within Olympic National Forest would be felled away from the road and left at the edge of the vegetation clearing limits to provide habitat for terrestrial mollusks and other animals that use downed wood.

Fish and Fish Habitat

Operational Measures

- Culverts at ARs 9, 11, 19, 27, 30a, 30b, and 48 requiring aquatic organism passage (AOP) would be designed in accordance with accepted stream simulation methods. It is estimated that a total of 0.15 acre of the streambed would be restored for fish use as part of this mitigation.
- A wetland mitigation area would be constructed at the Neil Creek (AR 27) crossing and realignment area, including wetland creation within the existing roadway that would be abandoned north of the crossing and creation of wetlands in recently cleared areas south of the crossing. The mitigation area would total approximately 1.8 acres.
- Erosion controls would be monitored and maintained until site restoration is complete.
- Appropriate state of Washington guidelines for timing of in-water work periods specified for the relevant listed fish species (unless directed otherwise by USFWS) would be followed. USFWS and WDFW have stipulated an in-water work window of July 15 through October 15.
- The proposed project would comply with applicable conditions specified by WDFW and USFWS.
- Disturbed ground where runoff has the potential to drain into stream channels would be revegetated or protected from surface erosion by seeding, mulching, and other methods prior to the fall rainy season. Within one year after project completion, disturbed stream banks would be revegetated.
- Excess material (spoils) would be disposed of in a site approved by WFLHD to prevent entry to stream channels or other water bodies.

- If placement of large woody debris is undertaken, it would be conducted in coordination with WDFW, the Forest Service, USFWS, and USACE.
- Additional conservation measures are described under the threatened and endangered species section.

Construction Measures

- In areas where the project would potentially affecting the bed or banks of stream conditions specified by WDFW, USFWS, and USACE would be met.
- Instream work would generally be conducted from July through October (low-flow season); timing would vary to meet current USFWS and WDFW allowable work windows for hydraulic projects and to accommodate other listed species.
- Excess material (spoils) would be disposed of in a site approved by WFLHD to prevent entry to stream channels or other water bodies.
- If placement of large woody debris is undertaken, it would be conducted in coordination with the Forest Service, USACE, and USFWS.

More conservation measures were extracted from those specified in the NOAA Fisheries (2003b) biological opinion regarding culvert replacement on Forest Service land. These measures would be implemented for the Camp Grisdale Road project. More detailed conservation measures are described in the biological assessment for this project (Herrera 2005c).

- Work below bankfull elevation would be completed during the USFWS-specified in-water work window of July 15 through October 15.
- In-water work would not be initiated or continued in any project area where adult fish are spawning, where spawning is imminent, or where redds are present and in-water work would displace spawning or prespawning adults from spawning areas, or where disruption or dewatering of active redds is likely, as determined by an experienced fisheries biologist.
- Fish exclusion protocols from in-water work areas in accordance with USFWS and WDFW protocols would be followed.
- Fish handling and transfer protocols specified by USFWS and WDFW would be followed.
- A stormwater pollution prevention plan and oil spill prevention plan would be developed for the proposed project that includes methods and

measures to minimize erosion and sedimentation associated with the project.

- Turbidity and suspended sediment criteria based on water quality standards of the state of Washington (or other appropriate criteria) would be established. Temporary erosion and sediment control measures would be sufficient to confine water quality impacts within the limits established in the Washington Department of Ecology and WSDOT (1998) implementing agreement (i.e., 100 to 300 feet downstream of the disturbance).
- Boundaries of clearing limits associated with site access, riparian crossings, stream crossings, and staging and stockpile areas would be flagged to minimize overall disturbance and disturbance to critical vegetation.
- Staging areas (used for construction equipment storage, vehicle storage, fueling, servicing, etc.) would be established along existing roadways or turnouts beyond the 100-year floodplain area in a location and manner that precludes erosion into or contamination of the stream or floodplain.
- Clearing and grubbing activities required for preparation of staging or stockpile areas would be minimized. Stockpiling large wood, trees, riparian vegetation, other vegetation, sand, and topsoil removed for establishment of staging areas for site restoration would be minimized and placed outside critical areas.
- Sediment barriers would be placed around disturbed sites to prevent erosion and sedimentation associated with equipment and material storage sites, fueling operations, and staging areas from entering the stream directly, through natural drainage or road side ditches.
- Erosion controls would be monitored and maintained until site restoration is complete.
- If monitoring or inspection shows that the erosion controls are ineffective, work crews would be mobilized immediately to make repairs, install replacements, or install additional controls as necessary.
- Fuel or oil leakage from construction equipment into the stream channel and floodplain would be prohibited.
- Construction impact areas would be delineated on project plans, and work would be confined to the noted area. Construction impacts would be confined to the minimum area necessary to complete the project.

- Native streambed materials would be conserved above the bankfull elevation for later use in project restoration. To prevent contamination from fine soils, these materials would be kept separate from other stockpiled material that is not native to the streambed.
- Sedimentation of streams would be minimized during dewatering activities with methods such as use of diversion ponds where sediment can settle out of water prior to being returned to the stream. Flow at the outfall of the bypass system would be dissipated to diffuse erosive energy of the flow.

Additional conservation measures for fish and fish habitat protection during construction are described under the threatened and endangered species section.

Threatened and Endangered Species

Bull Trout

Conservation Measures

Operational Measures

Mitigation measures discussed under the fish and fish habitat section would also apply for bull trout. Additionally, the following conservation measures would be implemented to mitigate the long-term impacts of the Camp Grisdale Road project on bull trout. More detailed conservation measures are provided in the biological assessment prepared for this project (Herrera 2005c).

- Culverts in streams that contain bull trout habitat are proposed to be replaced at ARs 19, 27, and 48 with fish-passable culverts.
- The culvert at AR 25 is proposed to be replaced with a bridge.
- Approximately 0.075 acre of the streambed would be restored in streams that contain bull trout habitat.

Construction Measures

Construction conservation measures described under the Fish and Fish Habitat section also apply to bull trout.

Marbled Murrelet

Conservation Measures

Operational Measures

Applicable conservation measures for operation of the project were extracted from those specified by USFWS (2003b) in the biological opinion regarding effects of Olympic National

Forest program activities on northern spotted owl, marbled murrelet, and bald eagle. More details regarding conservation measures for marbled murrelet are provided in the biological assessment for this project (Herrera 2005c).

Measures for Habitat Removal

- When feasible, harvesting of trees from within 300 feet of suitable murrelet habitat would be avoided or minimized.
- Vegetation cut within the marbled murrelet critical habitat would occur outside the marbled murrelet nesting season.
- If vegetation is cut within suitable or critical habitat, it would be felled and left within the forest to provide woody debris habitat features.

Measures for Handling Individual Trees

- Known occupied murrelet nest trees would not be removed.
- If hazard trees or potential nest trees would be removed within suitable murrelet habitat during the early breeding season (April 1 to August 5) on Forest Service land, review by a wildlife biologist would be required.
- When feasible, the number of large conifers (greater than or equal to 21 inches dbh) that would be removed would be minimized. Trees would be felled in a manner to minimize impacts on surrounding trees and away from suitable habitat, if possible and safe to do so.
- When feasible, the removal of platforms, trees with platforms, and trees providing cover to platforms even if the stand is currently unoccupied by murrelets would be minimized and avoided.
- Proposed removal of any tree larger than 36 inches dbh within marbled murrelet nesting habitat would require review by a wildlife biologist.

Measures for Ground-Level Disturbance

- Habitat or nest sites would be avoided to the extent possible in the final design.

Measures for Marbled Murrelet Designated Critical Habitat

- Habitat or nest sites would be avoided to the extent possible in the final design.

The USFWS Biological Opinion dated October 2006 offers the following conservation recommendations for operation of the project:

“If a tree scheduled for felling is within a riparian corridor but at a distance from the floodplain that is greater than the height of the tree, the felled tree should be left on site. If the tree to be felled is within a distance equal to or less than the height of the tree from the active floodplain, the tree should be felled toward the aquatic habitat and left on site unless leaving the tree will pose additional danger to human health such as to cause injury, pose a high risk to downstream facilities or prevent the intended use of the facility from occurring.”

Construction Measures

The conservation measures below are extracted from those specified by USFWS (2003b) in the biological opinion regarding effects of Olympic National Forest program activities on northern spotted owl, marbled murrelet, and bald eagle. More details regarding conservation measures for marbled murrelet are provided in the biological assessment for this project (Herrera 2005c).

General Conservation Measures

- During the marbled murrelet nesting season (April 1 to September 15), all activities that are within disturbance distance and that generate noise above 92 dB would be scheduled between 2 hours after sunrise and 2 hours before sunset.

Measures for Habitat Removal

- When feasible, harvesting of trees from within 300 feet of suitable murrelet habitat would be avoided or minimized.
- Clearing of critical habitat would occur outside the full nesting period.

Measures for Handling Individual Trees

- Known occupied murrelet nest trees would not be removed.
- If hazard trees or potential nest trees are to be removed within suitable murrelet habitat during the early breeding season (April 1 to August 5) on Forest Service land, review by a Forest Service wildlife biologist would be required.
- When feasible, the number of large conifers (greater than or equal to 21 inches dbh) removed would be minimized. Trees would be felled in a manner to minimize impacts on surrounding trees and away from suitable habitat, if it is possible and safe to do so.

- When feasible, the removal of platforms, trees with platforms, and trees providing cover to platforms would be avoided or minimized even if the stand is currently unoccupied by murrelets.
- On Forest Service land, proposed removal of any tree larger than 36 inches dbh within marbled murrelet nesting habitat would require review by an Olympic National Forest wildlife biologist.

Measures for Handling Active Nests

- If an active marbled murrelet nest is found on Forest Service land, a Forest Service wildlife biologist would be notified immediately. All construction activities that create noises of 92 decibels and above (Table 5-2) and are within the injury threshold distances (Table 5-3) are prohibited during the early nesting season (April 1 to August 5).

Measures for Ground-Level Disturbance

- Habitat or nest sites would be avoided to the extent possible in the final design.
- Where murrelet nests are located, construction would occur during breeding season but only between 2 hours after sunrise and 2 hours before sunset.

The USFWS Biological Opinion dated October 2006 offers the following conservation recommendations during construction of the project:

“Batch plants and staging areas for machinery and materials required for road construction should be located at least 45 yd from suitable murrelet habitat throughout the year.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.”

Northern Spotted Owl

Conservation Measures

Operational Measures

More detailed conservation measures for northern spotted owl are provided in the biological assessment for this project (Herrera 2005c).

- Vegetation cut within the northern spotted owl suitable habitat would occur outside the owls’ nesting season.

- The removal or disturbance of suitable and dispersal habitat would be minimized.
- Damage to potential northern spotted owl nesting trees adjacent to the project would be minimized.

USFWS (2003b) specifies the following additional operational conservation measures in the biological opinion regarding effects of Olympic National Forest program activities on northern spotted owl, marbled murrelet, and bald eagle.

Measures for Handling Individual Trees

- If a northern spotted owl nest tree is found in the project corridor, it would not be removed.
- The number of large conifers (21 inches dbh or larger) removed would be minimized or avoided. Trees would be felled in a manner to minimize impacts on surrounding trees and away from suitable habitat, if it is possible and safe to do so.
- On Forest Service land, any removal of dispersal habitat within northern spotted owl designated critical habitat would require review by a Forest Service biologist.
- On Forest Service land, any proposed removal of any tree larger than 36 inches dbh within suitable spotted owl habitat would require review by a Forest Service wildlife biologist.

Construction Measures

More detailed construction conservation measures for northern spotted owl are provided in the biological assessment for this project (Herrera 2005c).

- The removal or disturbance of suitable and dispersal habitat would be minimized.
- Clearing of habitat within suitable habitat for owls would occur outside the nesting period.
- Damage to potential northern spotted owl nesting trees adjacent to the project would be minimized.
- Disturbance related to human presence and activities would be minimized by confining construction activities to daylight hours, when owls are less active, when working in areas that are within 3 miles of suitable habitat sites.

- Project activities within sound-only injury threshold distances to northern spotted owl suitable habitat would be restricted to outside the early breeding season (March 1 to July 15). Also, where feasible, activities listed in Table 5-4 would be limited to distances beyond the injury threshold distances.

USFWS (2003b) specifies the following additional conservation measures in the biological opinion regarding effects of Olympic National Forest program activities on northern spotted owl, marbled murrelet, and bald eagle.

Measures for Handling Individual Trees

- If a northern spotted owl nest tree is found in the project corridor, it would not be removed.
- On Forest Service land, if hazard tree removal or potential nest tree removal is to be done within suitable owl habitat during the northern spotted owl early breeding season (March 1 to July 15), review by a Forest Service wildlife biologist would be required.
- On Forest Service land, any removal of dispersal habitat within northern spotted owl designated critical habitat would require review by a Forest Service biologist.
- On Forest Service land, any proposed removal of any tree larger than 36 inches dbh within suitable northern spotted owl habitat would require review by a Forest Service wildlife biologist.

Measures for Active Nests

- If an active northern spotted owl nest is found on Forest Service land, a Forest Service wildlife biologist would be notified immediately. All construction activities that create noises of 92 decibels and above (Table 5-2) and are within the injury threshold distances (Table 5-4) would be prohibited during the early nesting season (March 1 to July 15).

Bald Eagle

Conservation Measures

Operational Measures

The following conservation measures were derived from the biological opinion for Olympic National Forest program activities (USFWS 2003b). More detailed conservation measures for bald eagle are provided in the biological assessment for this project (Herrera 2005c).

Measures for Handling Individual Trees

- When feasible, the removal of large conifers (greater than or equal to 21 inches dbh) would be minimized. Trees would be felled in a manner to minimize impacts on surrounding trees and away from potential roosting or nesting habitat, if it is possible and safe to do so.
- On Forest Service land, any proposed removal of a tree larger than 36 inches dbh within a bald eagle use area would require review by a Forest Service wildlife biologist.

Construction Measures

The following conservation measures were derived from the biological opinion for Olympic National Forest program activities (USFWS 2003b). More detailed conservation measures for bald eagle are provided in the biological assessment for this project (Herrera 2005c).

Measures for Handling Individual Trees

- When feasible, minimize the removal of large conifers (greater than or equal to 21 inches dbh). Trees would be felled in a manner to minimize impacts on surrounding trees and away from potential roosting or nesting habitat, if it is possible and safe to do so.
- On Forest Service land, any proposed removal of a tree larger than 36 inches dbh within a bald eagle use area requires review by a Forest Service wildlife biologist.

Measures for Active Nests

- If an active bald eagle nest is found on Forest Service land, a Forest Service wildlife biologist would be notified immediately.

Land Use

Operational and Construction Measures

- No substantial changes in current land use are expected to result from the preferred alternative, therefore no mitigation is proposed. The majority of the project corridor is used for timber production and no change from that land use is expected in the near future. The Grays Harbor County Comprehensive Zoning Ordinance provides the strategy to control or enhance patterns of residential and economic development on private lands within the project corridor, if land uses begin to change.

Socioeconomics

Operational and Construction Measures

- Project communication and coordination would be maintained with the Forest Service and the Green Diamond Resource Company, so that project construction impacts to Forest Service projects, Green Diamond Resource Company logging operations, and Tacoma Power operations can be reduced or avoided. Construction closures could be limited, if recreational impacts are found to be substantial.

Environmental Justice

Operational and Construction Measures

- There would be no disproportionate impact on any minority or low-income group, and specific mitigation is not required.

Public Services and Utilities

Operational Measures

- The proposed roadway alignment would avoid the power vaults.

Construction Measures

- Anticipated road closures or schedules during construction would be coordinated with the Grays Harbor County Fire Department, the Olympic National Forest fire crews, the Washington State Patrol, and the Grays Harbor County Sheriff's Office to ensure that reliable emergency access is maintained.

Archaeological and Cultural Resources

Operational and Construction Measures

- In the event that cultural or archeological resources are identified during Camp Grisdale Road improvement project activities, work would be halted in the immediate vicinity of the find and a professional archaeologist notified to assess the resource. SHPO would be consulted.

Scenery and Aesthetics

Operational Measures

- Roadside clear zones would be limited to the minimum size necessary to provide adequate visibility for safety.
- Staging areas, construction areas, and material source and waste sites would be reclaimed as appropriate.
- Areas disturbed during construction would be seeded to reestablish vegetation.

Construction Measures

- During grading and excavation, cut lines into slopes would be contoured at the clearing limits as is feasible to help soften the visual effect of clearing vegetation from the right-of-way.
- Roadside clear zones would be limited to the minimum size necessary to provide adequate visibility for safety.

Recreation

Operational Measures

- Adequate signage would be installed to direct recreational travelers through construction areas to designated recreational facilities.

Construction Measures

- Construction staging areas would be located as far from recreation areas and facilities as feasible.

Air Quality

Operational Measures

- No mitigation measures for project operation are proposed, because no long-term adverse impacts on air quality are anticipated.

Construction Measures

- Dust suppression measures would be implemented during construction.

Noise

Operational Measures

- No mitigation measures for noise abatement are required for the preferred alternative, because no adverse effects on noise conditions are expected as a result of the Camp Grisdale Road improvements. (Noise mitigation measures to wildlife and threatened and endangered species are covered under those sections).

Construction Measures

- Construction equipment mufflers would be maintained.

Hazardous Materials

Operational Measures

- No mitigation is proposed for potential impacts due to hazardous materials, because no long-term impacts are anticipated.

Construction Measures

- Site-specific oil spill prevention and pollution control plans would be prepared to manage any hazardous materials used in construction.

Natural Resources and Energy

Operational and Construction Measures

No major changes in vehicle usage are expected to result from the proposed action; therefore no mitigation is proposed.

Construction Traffic, Delays, and Detours

The mitigation measures proposed to minimize traffic impacts during construction are the following:

- A traffic control plan would be developed before construction. It would be coordinated with roadway users.
- The road would be closed Tuesday through Thursday and open Friday through Monday. The road would be open Memorial Day and Labor Day weekends and July Fourth week.

- A public information plan would be prepared and implemented to warn motorists in advance of construction activity and road closures.
- Work zone signage would be installed.
- Work zone signage would be removed when construction is complete.
- Notification and coordination with regular users, such as Tacoma Power and Green Diamond Resource Company, of Camp Grisdale Road would be ongoing during construction.

7.0 Federal Permits and Approvals Required

- National Pollutant Discharge Elimination System (NPDES) permit from the U.S. Environmental Protection Agency (U.S. EPA)
- Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers for filling or dredging in waters of the United States, which include project wetlands
- Certification of compliance with Clean Water Act Section 401 by the Washington Department of Ecology.
- Compliance with Section 7 of Endangered Species Act.
- Compliance with Section 106 of the National Historic Preservation Act.
- Federal consistency determination with the Washington Coastal Zone Management Plan.

8.0 Coordination and Consultation

As the lead federal agency in the preparation of this environmental assessment, Western Federal Lands Highway Division of the Federal Highway Administration follows its Nationwide Action Plan procedures in developing highway improvements in conformance with the 1969 National Environmental Policy Act. These steps are taken to ensure that an interdisciplinary approach is used in addressing the social, economic, and environmental impacts of all phases of highway planning, location, design, and construction.

Social, Economic, and Environmental Team

The social, economic, and environmental (SEE) Study Team was established before the environmental study phase of this project began. The SEE Study Team is responsible for clarifying issues, recommending alternatives, and identifying and assessing environmental impacts. The team includes representatives from the Federal Highway Administration, Forest Service, and Grays Harbor County. SEE Study Team members call on available disciplines within their agencies for technical assistance as needed.

The SEE Study Team members for the proposed project are listed below:

- Mike Traffalis, Design Operations Engineer, Western Federal Lands Highway Division
- Rochelle Byars, Environmental Specialist, Western Federal Lands Highway Division
- Darin Bowman, Project Designer, Western Federal Lands Highway Division
- Russell Esses, Grays Harbor County Engineer, Washington State Department of Transportation
- Kyle Noble, Lands and Special Uses Administrator, USDA Forest Service.

Coordinating Agencies and Other Interested Parties

The following public agencies are on the distribution list and are scheduled to receive a copy of this environmental assessment.

Grays Harbor County
100 West Broadway

Montesano, Washington 98563

Green Diamond Resource Company
215 N. Third Street
Shelton, Washington 98584

National Marine Fisheries Service
510 Desmond Drive SE
Lacey, Washington 98503

Olympic Forest Coalition
7954 Pleasant LN NE Apt 3
Bainbridge Island, Washington 98110

Olympic National Park
P.O. Box 186
Hoodsport, Washington 98548

Tacoma Power
P.O. Box 1107
Tacoma, Washington 98411

U.S. Army Corps of Engineers
Seattle District
P.O. Box 3755
Seattle, Washington 98124-3755

U.S. Department of Agriculture, Forest Service
Olympic National Forest
1835 Black Lake Blvd. SW
Olympia, Washington 98512-5623

U.S. Fish and Wildlife Service
Western Washington Office
510 Desmond Drive SE, Suite 102
Lacey, Washington 98501

Washington State Department of Ecology
Southwest Region Office
P.O. Box 47775
Olympia, Washington 98504

Washington State Department of Fish and
Wildlife
Region 6
48 Devonshire Road
Montesano, Washington 98563

Washington State Department of Transportation
Olympic Region
5720 Capitol Boulevard
Olympia, Washington 98504-7440

Public Involvement

Scoping

As part of scoping, a display ad announcing the initiation of the project was published in local newspapers in December 2003. The announcement was also sent to persons and organizations on a Forest Service mailing list. On May 20, 2004, a public notice for the Camp Grisdale Road project open house was published in the Montesano paper, *The Vidette*, and the Aberdeen paper, *The Daily World*. Copies of the notice were sent to persons and organizations on a Forest Service mailing list. The notice is posted on the Western Federal Lands Highway Division web site (<http://www.wfl.fha.dot.gov/projects/campgrisdale/>).

The project checklist open house was held at Montesano City Hall on May 24, 2004 from 5:00 p.m. to 7:00 p.m. (WFLHD 2004b). Nineteen members of the public attended. Two did not sign the sign-in sheet, and three attendees were county commissioners. All SEE Study Team members attended. In addition to the SEE Study Team, attendees included Brian Minor of WFLHD and Chuck Dissan, the WFLHD construction engineer.

An 8-page handout was provided that included the following: a map showing the project vicinity and the beginning and the end of the project corridor, a project name and route identification sheet that included agency contact and SEE Study Team information, a brief description of

WFLHD, a brief description of the project and its purpose and need, a map of potential realignment areas, a diagram of existing and proposed road sections, a proposed project schedule and list of environmental considerations, and a comment sheet that could be mailed to WFLHD by June 7, 2004.

Participants were given the opportunity to make verbal or written comments at the meeting, or to comment after the meeting via letter, email, or phone call. Instructions on how to comment after the meeting are provided on the project website.

The oral comments from the meeting are listed in the *Summary of Open House* (WFLHD 2004b) and included the following subjects: need for the project; possible speeding, drinking, crime, illegal camping and the need for increased law enforcement; possible increased accident rate; lack of phones for emergency use in the corridor; Coho Campground use levels; potential increases in trail use; need for improvement to Wynoochee Valley Road; potential impacts on horse trails; and allocation of funds to other projects. Comments were considered during further development of the action alternative.

Three written comments and two email comments were received. Two supported the project. The comments are available in Appendix D.

The comments are summarized below:

- Increased usage of the area would discourage “unsavory types.” Improvement of the road would be the first step in improving transportation to Olympic National Park from I-5.
- Fire response would be faster and fire trucks would not be damaged by the rough road surface. Law enforcement would need to be increased to match the increased traffic.
- Concern was expressed over lack of phones and cell phone capabilities, speed (both now and after paving), the small capacity of Coho Campground, the lack of law enforcement, and the need to improve Wynoochee Valley Road south of Camp Grisdale Road.
- Speed and lack of phone facilities were a concern, along with the increased fire hazard that would result from the project. Drivers would underestimate how far they could travel on a tank of gas, more trash would be left, questions from drivers would annoy residents, and more parties would occur. Squatters would come to the area, and environmental impacts to the forest would result. Fees should be increased, it should be a toll road with speed bumps.
- Concern was expressed about safety.

The distribution list for this environmental assessment is provided in Appendix A.

Environmental Assessment Circulation

The FHWA distributed copies of the *Draft Camp Grisdale Road Improvements Environmental Assessment* to public agencies and interested parties in February 2005. A public open house was held in the City of Montesano on March 23, 2005. Representatives of the FHWA, the Forest Service, the City of Montesano, and Grays Harbor County were in attendance to answer questions. Comments heard during the public meeting are summarized below. Responses to oral and written comments are also included in this section. The original written comments are provided in Appendix D.

Summary of Oral Comments and Responses during March 23, 2005 Public Meeting

The Camp Grisdale Road Improvements Project environmental assessment was released for public and agency review the first week of March, 2005. The open house was held after release of the environmental assessment in the Montesano city hall between 5 p.m. and 7 p.m., March 23, 2005. The open house was advertised in the Montesano *Vidette* on March 2, 2005. Articles appeared in the Aberdeen *Daily World* on March 22, 2005 and in the *Vidette* after the open house.

Russ Esses attended from Grays Harbor County; Rochelle Byars, Mike Traffalis, and Darin Bowman attended from WFLHD; and Amanda Azous, Josh Wozniak, and Lindsey Amtmann from Herrera Environmental Consultants, Inc. attended. Twelve people signed the attendance sheet.

Oral comments at the meeting included:

Comment: Increased speed would result from paving the road.

- **Response:** The design speed (maximum safe speed that can be maintained over a specified section of highway when conditions are so favorable that the design features of the highway govern) for the road would be 40 mph for FR 22 and 25 mph for FDR 2294. In other words, the design of curves and width would enable a motorist to safely maintain a 40 mph speed on FR 22 and a 25 mph speed on FDR 2294. The posted speed limit would be lower than the design speed.

Comment: Increased access would be provided for poachers.

- **Response:** Improved access will be provided for all users of the road. It is difficult to predict whether an improved road would attract poachers.

Comment: Car/wildlife collisions would increase.

- **Response:** Sight distance would be improved so that wildlife in the road would be easily seen. Vehicles would have sufficient time to avoid animals. Wildlife crossing warning signs would be placed at crossing identified in coordination with appropriate agencies.

Comment: Increased law enforcement would be needed.

- **Response:** It is difficult to predict whether more illegal activity would occur after improvements to the road.

Comment: The improvements would result in increased access to already insufficient recreation facilities.

- **Response:** If recreation facilities become full, the users would seek facilities elsewhere.

Comment: Transferring the road to the county would mean increased maintenance with no increase in funding.

- **Response:** After the road is improved, little maintenance would be necessary in the short term. Grays Harbor County is a cooperating agency in the development and construction of the proposed project and has agreed to maintain the road. Maintenance costs are expected to be reduced because the paved road would require less maintenance.

Comment: Adverse impacts to wildlife would be caused by increased human presence.

- **Response:** Wildlife may be affected by increased human presence. Humans currently visit the area and share it with wildlife. The area is in a national forest and is used for recreation by the public who owns the national forests.

Comment: Some support the project.

- No response is necessary.

Comment: Some stated agreement with the stated need for the proposed improvements.

- No response is necessary.

Comment: Donkey Creek Road should be improved to make a loop with Grisdale Road, US 101, and US 12.

- No response is necessary.

Following the Public Open House, seven written comments and three emails were received.

Written comments included:

Comment: The project is a waste of money and the county cannot afford the maintenance.

- **Response:** Grays Harbor County is a cooperating agency in development and construction of the proposed project. The county has agreed to accept maintenance responsibilities. Maintenance costs are expected to be reduced because the paved road would require less maintenance.

Comment: Fish passage barrier removal and culvert repair are necessary and should be done without the other proposed improvements. To reduce sediment, the road should be paved only on 100 feet on either side of stream crossing.

- **Response:** Paving the road would eliminate dust that not only impacts streams, but also settles on roadside vegetation and in wetlands. Drainage on the road would be improved to reduce the flow of stormwater into streams.

Comment: The road improvements would result in higher speeds.

- **Response:** The design speed (maximum safe speed that can be maintained over a specified section of highway when conditions are so favorable that the design features of the highway govern) for the road would be 40 mph for FR 22 and 25 mph for FDR 2294. In other words, the design of curves and width would enable a motorist to safely maintain a 40 mph speed on FR 22 and a 25 mph speed on FDR 2294. The speed limit would be posted lower than the design speed.

Comment: Northern spotted owl and marbled murrelet habitat should not be sacrificed for a road.

- **Response:** The road has been designed to minimize impacts to habitat for both the marbled murrelet and the northern spotted owl. In coordination with the Forest Service and the County, the FHWA has determined that the improvement represents the best balance in meeting transportation needs and habitat protection.

Comment: Increased development would result. Wildlife would suffer and the

area would lose its semi-wilderness experience.

- **Response:** No development in the area is currently planned. It is unlikely that increased development would occur in the National Forest.

Comment: Increased need for WDFW law enforcement would result.

- **Response:** It is difficult to predict whether increased illegal activity would result from improvements to Camp Grisdale Road.

Comment: Increased need for county law enforcement and emergency services.

- **Response:** It is difficult to predict whether illegal activities and accidents would increase. Improved emergency access to the Wynoochee Lake area and reduced travel time for emergency vehicles would be a beneficial benefit.

Comment: Increased maintenance of infrastructure would result.

- **Response:** Improvements to the road would reduce maintenance needs.

Comment: Cleaner air, increased access to fishing, and wildlife watching opportunities would result.

- **Response:** No response is needed.

Comment: The project is a waste of tax dollars. Money is needed for other things like schools.

- **Response:** The proposed project is funded by the Federal Lands Highway Program. Funding for the program comes from gasoline taxes and can only be used for roadway-related projects. As such, the funding for the proposed project cannot be used to fund schools.

Comment: Increased rescue needs would result.

- **Response:** It is difficult to predict whether rescue needs would increase as a result of the road. Emergency vehicles would have improved access and response times to areas along the road.

Comment: Scot's broom would spread.

- **Response:** Construction vehicles would be washed to reduce spread of noxious weeds. The US Forest Service would cooperate with WFLHD to develop a plan to reduce the spread of noxious weeds during construction.

Comment: Campgrounds would be insufficient for increased number of people.

- **Response:** If camping facilities in the area become full, visitors would have to leave and find other areas to camp.

Comment: Reduction of soil erosion, airborne sediment, delivery of sediment to streams, improved hydraulic connectivity, and fish passage improvements would result.

- **Response:** The commenter is correct.

Comment: There is concern for the northernmost 4 miles and removal of old-growth forest, Late Successional Reserve, and Critical Habitat and concern for marbled murrelet impacts.

- The commenter believes that the project is in conflict with the *Northwest Forest Plan*
- The commenter believes that an EIS should be written for the project.
- The commenter requests that the northernmost 4 miles of road be improved within the existing road prism with no loss of trees.
- **Response:** The width of disturbance for construction of the roadway through northern spotted owl and marbled murrelet critical habitat has been reduced. In the habitat, which is in the National Forest in the northern portion of the project, 0.8 acre of critical habitat immediately adjacent to the road would be impacted. In that acreage, most of the trees are alder or small diameter conifers. Twenty-three trees with diameters greater than 21 inches would be removed. The trees would be felled into the forest and left there. WFLHD is currently evaluating a design that further reduces the number of large trees to be removed.

Presence of marbled murrelets was detected during surveys. No northern spotted owls were identified. Appropriate mitigation measures during construction would reduce temporary construction impacts to murrelets. Long-term impact to murrelets would be minor after construction is complete. After the initial response to the commenter, critical habitat was evaluated in more detail. USFWS personnel determined that only 2 trees are potential murrelet nesting trees.

WFLHD believes that the proposed project would not result in significant impacts to the environment. An environmental impact statement (EIS), that is a document to evaluate significant impacts is not necessary. This initial response was erroneous. The SEE team would evaluate the overall project effects to the human environment as required by NEPA. If it is determined that the project would have no significant impact, WFLHD will issue a Finding of No Significant Impact (FONSI). If it is determined

that the project will have a significant impact, the WFLHD will reevaluate the project with the SEE team. If all agree to proceed, then WFLHD would begin preparing an EIS.

Comment: The Open house should be in a meeting form so all comments can be heard by all.

- **Response:** The open house was planned so that individual questions and comments could receive individualized attention and answers.

Comment: Will the Forest Service provide more campsites?

- **Response:** At this time, no additional campsites are planned.

Comment: Will Donkey Creek Road be widened and paved to get to campgrounds at the beach?

- **Response:** At this time, no improvements to Donkey Creek Road are planned.

Comment: People will drive faster and cell phones, that currently don't work there, will be needed because of accidents.

- **Response:** A phone is located at the Wynoochee Lake picnic area. FR 22 would have a design speed of 40 mph and FDR 2294 would have a design speed of 25 mph. It is difficult to predict if an increase in accidents would result from improvements to the road.

Comment: Will there be pure water at Coho Campground?

- **Response:** Water for campers is provided at Coho Campground from approximately May 1 to September 30. The water is tested monthly per drinking water standards. The water system does have a history of failing these standards, and in fact failed this past September, resulting in an early closure of the campground and water system.

Comment: Vandalism occurs and insufficient law enforcement is available. Why is the government spending \$14 million to pave the road.

- **Response:** The proposed project would increase safety, decrease maintenance, and improve drivability of the road.

Comment: Simpson Timber will take a toll on the road.

- **Response:** Improvements to the road would reduce dust and maintenance on the road. The road would be designed to withstand logging-truck loads.

Comment: The project at Matzen Road has not improved the road.

- **Response:** The commenter is referring to a project that was done on Wynoochee Valley Road near the intersection with Matzen Road. The comment is the opinion of the commenter.

Email comments included:

Comment: Would all culverts be assessed for fish passage?

- **Response:** All of the culverts were assessed for fish passage and fish habitat.

Comment: Noise will increase.

- **Response:** During construction, heavy equipment could increase noise levels temporarily, but is not likely to be substantially higher than noise generated by heavy haul traffic currently using the road. Traffic driving over the finished road may generate slightly lower noise due to the smoother pavement surface. This could possibly be offset by an increase in traffic. Any permanent noise increase would be negligible to minor.

Comment: Residential development might occur.

- **Response:** No residential development would occur on Forest Service land. Green Diamond Resource Company currently has no plans for residential development on its properties in the area.

Comment: Surface runoff would increase.

- **Response:** Gravel roads, such as Camp Grisdale Road, are considered to have impervious surfaces, and, as such, have the same amount of runoff as paved surfaces. The impervious surface of Camp Grisdale Road, after improvements, would increase 17 percent.

Comment: During construction, erosion control is necessary.

- **Response:** During construction of the road, an erosion control plan would be implemented. A National Pollution Discharge Elimination System (NPDES) permit would be required. A requirement of the NPDES permit is the development of a stormwater pollution prevention plan (SWPPP). A SWPPP would be developed, implemented and monitored during construction.

Comment: The project is a bad idea. The road to access Grisdale Road is narrow and curvy.

- **Response:** The commenter is referring to the Wynoochee Valley Road that connects the project area to Montesano. It is a narrow and winding road.

Comment: Emergency response time to accidents would be 30 minutes.

- **Response:** Response time for emergency vehicles would be reduced because of improved road surface and alignment.

Comment: Grays Harbor County sheriff is already overburdened.

- **Response:** Grays Harbor County is a cooperating agency in development and construction of the proposed project. The Grays Harbor County sheriff does not object to improvements to the road.

Comment: Residents on Wynoochee Valley Road would be impacted by increased traffic.

- **Response:** It is difficult to predict how much the traffic would increase as a result of improvements to Camp Grisdale Road.

Comment: The project would change a wild country into a tame one.

- **Response:** The area would continue to be remote and rural after completion of the project. No development is planned in the area. Many forest roads in the area will remain unimproved and unpaved.

Comment: A cost benefit study should be done because maintenance is being transferred to the county. The county can't afford the cost.

- **Response:** Grays Harbor County is a cooperating agency in development and construction of the proposed project and has agreed to assume maintenance of the road upon completion of construction.

Comment: There would be racing.

- **Response:** It is difficult to predict whether there would be racing on the road.

Comment: Cell phones don't work in the area and there are no services like food, water, or gas.

- **Response:** A public phone is located at the Wynoochee Lake picnic area facility. A sign warning that no services are located along the road would

be posted near the beginning of the project.

Comment: The long-term cost of maintaining the road versus the cost of building the project should be examined.

- **Response:** The purpose of constructing the road is to increase safety, as well as decrease maintenance.

Comment: Wildlife would be impacted by more people. Land should be set aside and protected as mitigation for the impacts.

- **Response:** Visitors currently are in the area. It may be that road improvements would increase visitations. The amount of visitor increase and the extent to which wildlife would be impacted is difficult to determine. Currently, no mitigation land for wildlife impacts is planned as part of the project.

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USFWS. 1985b. National Wetlands Inventory map. Larsen Creek quadrangle. Scale 1:24,000. U.S. Department of the Interior, Fish and Wildlife Service.

USFWS. 1985c. National Wetlands Inventory map. Wynoochee Valley NE quadrangle. Scale 1:24,000. U.S. Department of the Interior, Fish and Wildlife Service.

USFWS. 1985d. National Wetlands Inventory map. Wynoochee Valley NW quadrangle. Scale 1:24,000. U.S. Department of the Interior, Fish and Wildlife Service.

USFWS. 1985e. National Wetlands Inventory map. Wynoochee Lake quadrangle. Scale 1:24,000. U.S. Department of the Interior, Fish and Wildlife Service.

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USFWS. 2004c. Spotted owl general information available online at U.S. Department of the Interior, Fish and Wildlife Service website: <http://arcata.fws.gov/es/birds/ns_owl.htm>.

USFWS. 2005. Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for the Bull Trout. Federal Register Vol. 70:185:56212–56260. U.S. Department of the Interior, Fish and Wildlife Service. September 26, 2005.

USFWS. 2006. Biological Opinion on the Effects to Federally Listed Species from Camp Grisdale Road Improvements Grays Harbor County, Washington (FWS Reference: 1-3-06-F-0053). U.S. Department of the Interior Fish and Wildlife Service Western Washington Fish and Wildlife Office Lacey, Washington. October 2006.

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APPENDIX A

Environmental Assessment Distribution List

Appendix A—Environmental Assessment Distribution List

Grays Harbor Chamber of Commerce
506 Duffy Street, Suite 100
Aberdeen, Washington 98520

Grays Harbor County
100 West Broadway
Montesano, Washington 98563

Green Diamond Resource Company
215 N. Third Street
Shelton, Washington 98584

Montesano Chamber of Commerce
100 Brumfield Avenue
Montesano, Washington 98563

National Marine Fisheries Service
510 Desmond Drive SE
Lacey, Washington 98503

Olympic Forest Coalition
7954 Pleasant Lane NE, Apt 3
Bainbridge Island, Washington 98110

Olympic National Park
P.O. Box 186
Hoodsport, Washington 98548

Skokomish Tribe
North 80 Tribal Center Road
Skokomish, Washington 98584

Tacoma Power
P.O. Box 1107
Tacoma, Washington 98411

U.S. Army Corps of Engineers
Regulatory Branch
Seattle District
P.O. Box 3755
Seattle, Washington 98124-3755

U.S. Department of Agriculture, Forest
Service
Olympic National Forest
1835 Black Lake Boulevard SW
Olympia, Washington 98512-5623

U.S. Fish and Wildlife Service
Western Washington Office
510 Desmond Drive SE, Suite 102
Lacey, Washington 98501

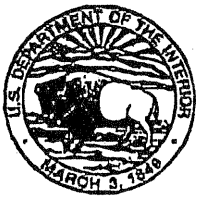
Washington State Department of Ecology
Southwest Region Office
P.O. Box 47775
Olympia, Washington 98504-775

Washington State Department of Fish and
Wildlife
Region 6
48 Devonshire Road
Montesano, Washington 98563

Washington State Department of
Transportation
Olympia Region
5720 Capitol Boulevard
Tumwater, Washington 98504-7440

APPENDIX B

Agency Correspondence



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Western Washington Fish and Wildlife Office
510 Desmond Drive SE, Suite 102
Lacey, Washington 98503
Phone: (360) 753-9440 Fax: (360) 534-9331

RECEIVED
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DEC 06 2002

Dear Species List Requester:

We (U.S. Fish and Wildlife Service) are providing the information you requested to assist your determination of possible impacts of a proposed project to species of Federal concern. Attachment A includes the listed threatened and endangered species, species proposed for listing, candidate species, and/or species of concern that may be within the area of your proposed project.

Any Federal agency, currently or in the future, that provides funding, permitting, licensing, or other authorization for this project must assure that its responsibilities under section 7(a)(2) of the Endangered Species Act of 1973, as amended (Act), are met. Attachment B outlines the responsibilities of Federal agencies for consulting or conferencing with us.

If both listed and proposed species occur in the vicinity of a project that meets the requirements of a major Federal action (i.e., "major construction activity"), impacts to both listed and proposed species must be considered in a biological assessment (BA) (section 7(c); see Attachment B). Although the Federal agency is not required, under section 7(c), to address impacts to proposed species if listed species are not known to occur in the project area, it may be in the Federal agency's best interest to address impacts to proposed species. The listing process may be completed within a year, and information gathered on a proposed species could be used to address consultation needs should the species be listed. However, if the proposed action is likely to jeopardize the continued existence of a proposed species, or result in the destruction or adverse modification of proposed critical habitat, a formal conference with us is required by the Act (section 7(a)(4)). The results of the BA will determine if conferencing is required.

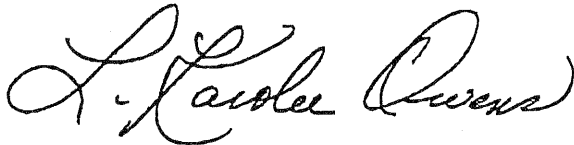
The Federal agency is responsible for making a determination of the effects of the project on listed species and/or critical habitat. For a Federal agency determination that a listed species or critical habitat is likely to be affected (adversely or beneficially) by the project, you should request section 7 consultation through this office. For a "not likely to adversely affect" determination, you should request our concurrence through the informal consultation process.

Candidate species and species of concern are those species whose conservation status is of concern to us, but for which additional information is needed. Candidate species are included as an advance notice to Federal agencies of species that may be proposed and listed in the future. Conservation measures for candidate species and species of concern are voluntary but recommended. Protection provided to these species now may preclude possible listing in the future.

For other federally listed species that may occur in the vicinity of your project, contact the National Marine Fisheries Service (NOAA Fisheries) at (360) 753-9530 to request a list of species under their jurisdiction. For wetland permit requirements, contact the Seattle District of the U.S. Army Corps of Engineers for Federal permit requirements and the Washington State Department of Ecology for State permit requirements.

Thank you for your assistance in protecting listed threatened and endangered species and other species of Federal concern. If you have additional questions, please contact Yvonne Dettlaff (360) 753-9582.

Sincerely,



for Ken S. Berg, Manager
Western Washington Fish and Wildlife Office

Enclosure(s)

ATTACHMENT A

December 3, 2002

**LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES, CRITICAL
HABITAT, CANDIDATE SPECIES, AND SPECIES OF CONCERN THAT MAY
OCCUR IN THE VICINITY OF THE PROPOSED
CAMP GRISDALE ROAD RECONSTRUCTION PROJECT
IN GRAYS HARBOR COUNTY, WASHINGTON**

(T20N R7W S5-8,17-19,30; T20N R8W S1,12,25,36; T21N R7W S6-7,18-19,30-31;
T21N R8W S1; T22N R7W S17-20,29-31)

FWS REF: 1-3-03-SP-0355

LISTED

There is one bald eagle (*Haliaeetus leucocephalus*) nesting territory located in the vicinity of the project at T22N R7W S9. Nesting activities occur from January 1 through August 15.

Wintering bald eagles may occur in the vicinity of the project. Wintering activities occur from October 31 through March 31.

Bull trout (*Salvelinus confluentus*) occur in the vicinity of the project.

Marbled murrelets (*Brachyramphus marmoratus*) occur in the vicinity of the project. Nesting activities occur from April 1 through September 15.

Northern spotted owls (*Strix occidentalis caurina*) occur in the vicinity of the project. Nesting activities occur from March 1 through September 30.

Major concerns that should be addressed in your biological assessment of the project impacts to listed species include:

1. Level of use of the project area by listed species;
2. Effect of the project on listed species' primary food stocks, prey species, and foraging areas in all areas influenced by the project; and
3. Impacts from project construction (i.e., habitat loss, increased noise levels, increased human activity) that may result in disturbance to listed species and/or their avoidance of the project area.

05/06/03 TUE 12:58 FAX 360 619 7846

WFLHD

PROPOSED

None

CANDIDATE

None

CRITICAL HABITAT

Critical habitat for the marbled murrelet has been designated in the vicinity of the project.

SPECIES OF CONCERN

The following species of concern have been documented in the county where the project is located. These species or their habitat could be located on or near the project site. Species in **bold** were specific occurrences located on the database within a 1-mile radius of the project site.

Aleutian Canada goose (*Branta canadensis leucopareia*)
Cascades frog (*Rana cascadae*)
Coastal cutthroat trout (*Oncorhynchus clarki clarki*)
Columbia torrent salamander (*Rhyacotriton kezeri*)
Long-eared myotis (*Myotis evotis*)
Long-legged myotis (*Myotis volans*)
Makah's copper (*Lycaena mariposa charlottensis*)
Newcomb's littorine snail (*Algamorda newcombiana*)
Northern goshawk (*Accipiter gentilis*)
Olive-sided flycatcher (*Contopus cooperi*)
Olympic torrent salamander (*Rhyacotriton olympicus*)
Pacific lamprey (*Lampetra tridentata*)
Pacific western big-eared bat (*Corynorhinus townsendii townsendii*)
Pacific fisher (*Martes pennanti pacifica*)
Peregrine falcon (*Falco peregrinus*)
River lamprey (*Lampetra ayresi*)
Tailed frog (*Ascaphus truei*)
Tufted puffin (*Fratercula cirrhata*)
Van Dyke's salamander (*Plethodon vandykei*)
Western toad (*Bufo boreas*)
Aster curtus (white-top aster)
Dodecatheon austrofrigidum (frigid shootingstar)

ATTACHMENT B

**FEDERAL AGENCIES' RESPONSIBILITIES UNDER SECTIONS 7(a) AND 7(c)
OF THE ENDANGERED SPECIES ACT OF 1973, AS AMENDED**

SECTION 7(a) - Consultation/Conference

- Requires:
1. Federal agencies to utilize their authorities to carry out programs to conserve endangered and threatened species;
 2. Consultation with the U.S. Fish and Wildlife Service (FWS) when a Federal action may affect a listed endangered or threatened species to ensure that any action authorized, funded, or carried out by a Federal agency is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. The process is initiated by the Federal agency after it has determined if its action may affect (adversely or beneficially) a listed species; and
 3. Conference with the FWS when a Federal action is likely to jeopardize the continued existence of a proposed species or result in destruction or an adverse modification of proposed critical habitat.

SECTION 7(c) - Biological Assessment for Construction Projects *

Requires Federal agencies or their designees to prepare a Biological Assessment (BA) for construction projects only. The purpose of the BA is to identify any proposed and/or listed species that is/are likely to be affected by a construction project. The process is initiated by a Federal agency in requesting a list of proposed and listed threatened and endangered species (list attached). The BA should be completed within 180 days after its initiation (or within such a time period as is mutually agreeable). If the BA is not initiated within 90 days of receipt of the species list, please verify the accuracy of the list with the Service. No irreversible commitment of resources is to be made during the BA process which would result in violation of the requirements under section 7(a) of the Act. Planning, design, and administrative actions may be taken; however, no construction may begin.

To complete the BA, your agency or its designee should (1) conduct an onsite inspection of the area to be affected by the proposal, which may include a detailed survey of the area to determine if the species is present and whether suitable habitat exists for either expanding the existing population or potential reintroduction of the species; (2) review literature and scientific data to determine species distribution, habitat needs, and other biological requirements; (3) interview experts including those within the FWS, National Marine Fisheries Service, state conservation department, universities, and others who may have data not yet published in scientific literature; (4) review and analyze the effects of the proposal on the species in terms of individuals and populations, including consideration of cumulative effects of the proposal on the species and its habitat; (5) analyze alternative actions that may provide conservation measures; and (6) prepare a report documenting the results, including a discussion of study methods used, any problems encountered, and other relevant information. Upon completion, the report should be forwarded to our Endangered Species Division, 510 Diamond Drive SE, Suite 102, Lacey, WA 98503-1273.

"Construction project" means any major Federal action which significantly affects the quality of the human environment (requiring an EIS), designed primarily to result in the building or erection of human-made structures such as dams, buildings, roads, pipelines, channels, and the like. This includes Federal action such as permits, grants, licenses, or other forms of Federal authorization or approval which may result in construction



March 14, 2003

Hello!

I have included the following sources for information about Sensitive Plant and Survey and Manage species for our area.

- **Sensitive Species Plant List, Pacific Northwest Region, U.S. Forest Service - April 1999** (with species for the Olympic highlighted)
- **2001 Annual Species Review, Table 1 - 1. Species Included in Survey and Manage Standards and Guidelines and Category Assignment (June 2002)**
- **Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer and other Mitigation Measures Standards and Guidelines (January 2001). III. Survey and Manage Categories**

I have also included a worksheet which we use for prescreening projects on the Hood Canal Ranger District. This could be expanded to include several other species due to the project location.

- **Initial Review Worksheet for Botany**

Please let me know if there is any additional information that will assist in your environmental review.

Sincerely,

Patricia D. Gaver

**SENSITIVE SPECIES PLANT LIST
PACIFIC NORTHWEST REGION
U.S. FOREST SERVICE - April 1999**



Below is the "key" to the definitions in the spreadsheet.

Key to Region 6 Sensitive Species List

USFWS Status - status under the Endangered Species Act as administered by the U.S. Fish and Wildlife Service

LE- Listed Endangered

LT- Listed Threatened

PE - Proposed Endangered

PT - Proposed Threatened

C- Candidate

SoC- Species of Concern

Washington Status- status under the Endangered Species Act of Washington as administered by Washington Department of Natural Resources

E-Endangered

T- Threatened

S-Sensitive

X-Extirpated

Oregon Status - status under the Endangered Species Act of Oregon as administered by the Oregon Department of Agriculture Plant Conservation Biology Program

LE- Listed Endangered

LT- Listed Threatened

C- Candidate

Regional Forester's Sensitive Species List - status under Forest Service internal Manual standards

O- Listed for the state of Oregon

W- Listed for the state of Washington

W/O- Listed in both Washington and Oregon

Heritage GRANK- Global ranking as assigned by national Heritage Program ranging from 1-5, rarest being G1. Some include T ranks. These are used if the taxon in question has a trinomial (is a subspecies or variety).

Heritage SRANK WA/OR – State ranking as assigned by state Heritage Program for the state in which it is listed as Regional Forester's Sensitive. If sensitive in both states, there will be a slash separating the two and Washington will be first, Oregon last.

National Forest Names – Names of National Forests in Region 6

D- Documented

S- Suspected



State of Washington
DEPARTMENT OF FISH AND WILDLIFE

Mailing Address: 600 Capitol Way N • Olympia, WA 98501-1091 • (360) 902-2200, TDD (360) 902-2207
Main Office Location: Natural Resources Building • 1111 Washington Street SE • Olympia, WA

Date: MAR 31 2003

Dear Habitats and Species Requester:

Enclosed are the habitats and species products you requested from the Washington Department of Fish and Wildlife (WDFW). This package may also contain documentation to help you understand and use these products.

These products only include information that WDFW maintains in a computer database. They are not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife, nor are they designed to provide you with guidance on interpreting this information and determining how to proceed in consideration of fish and wildlife. These products only document the location of important fish and wildlife resources to the best of our knowledge. It is important to note that habitats or species may occur on the ground in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site-specific surveys are frequently necessary to rule out the presence of priority habitats or species.

Your project may require further field inspection or you may need to contact our field biologists or others in WDFW to assist you in interpreting and applying this information. Generally, for assistance on a specific project, you should contact the WDFW Habitat Program Manager for your county and ask for the area habitat biologist for your project area. Refer to the enclosed directory for those contacts.

Please note that sections potentially impacted by spotted owl management concerns are displayed on the 1:24,000 scale standard map products. If specific details on spotted owl site centers are required they must be requested separately.

These products are designed for users external to the forest practice permit process and as such, does not reflect all the information pertinent to forest practice review. The Forest Practice Rules adopted August 22, 1997 by the Forest Practice Board and administered by the Washington Department of Natural Resources require forest practice applications to be screened against marbled murrelet detection areas and detection sections. Marbled murrelet detection locations are included in the standard priority habitats and species products, but the detection areas and detection sections are not included. If your project is affected by Forest Practice Regulations, you should specially request murrelet detection areas.

WDFW updates this information as additional data become available. Because fish and wildlife species are mobile and because habitats and species information changes, project reviews for fish and wildlife should not rest solely on mapped information. Instead, they should also consider new information gathered from current field investigations. Remember, habitats and species information can only show that a species or habitat type is present, they cannot show that a species or habitat type is not present. These products should not be used for future projects. Please obtain updates rather than use outdated information.

Because of the high volume of requests for information that WDFW receives, we need to charge for these products to recover some of our costs. Enclosed is an invoice itemizing the costs for your request and instructions for submitting payment.

Please note that sensitive information (e.g., threatened and/or endangered species) may be included in this request. These species are vulnerable to disturbances and harassment. In order to protect the viability of these species we request that you not disseminate the information as to their whereabouts. Please refer to these species presence in general terms. For example: "A Peregrine Falcon is located within two miles of the project area".

If your request required a Sensitive Fish and Wildlife Information Release Agreement and you or your organization has one on file, please refer to that document for conditions regarding release of this information.

For more information on WDFW you may visit our web site at <http://www.wa.gov/wdfw> or visit the Priority Habitats and Species site at <http://www.wa.gov/wdfw/hab/phspage.htm>.

For information on the state's endangered, threatened, and sensitive plants as well as high quality wetland and terrestrial ecosystems, please contact the Washington Department of Natural Resources, Natural Heritage Program at PO Box 47014, Olympia Washington 98504-7014, by phone (360) 902-1667 or visit the web site at <http://www.wa.gov/dnr/htdocs/fr/nhp/wanhp.html>.

If you have any questions or problems with the information you received please call me at (360) 902-2543 or fax (360) 902-2946.

Sincerely,



Lori Guggenmos, GIS Programmer
Priority Habitats and Species

Enclosures

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE REGIONAL HABITAT PROGRAM MANAGER CONTACTS

For assistance with Priority Habitats and Species Information contact a regional habitat program manger and they will direct your questions to a biologist.

County project is in...

Contact...

Asotin, Columbia, Ferry, Garfield Lincoln,
Pend Oreille, Spokane, Stevens, Walla Walla,
Whitman

Kevin Robinette
8702 North Division Street
Spokane, WA 99218-1199
Phone: (509) 456-4082

Adams, Chelan, Douglas, Grant, Okanogan

Tracy Lloyd
1550 Alder Street NW
Ephrata, WA 98823-9699
Phone: (509) 754-4624

Benton, Franklin, Kittitas, Yakima

Ted Clausing
1701 24th Avenue
Yakima, WA 98902-5720
Phone: (509) 575-2740

Island, King, San Juan, Skagit, Snohomish,
Whatcom

Deborah Cornett
16018 Mill Creek Blvd.
Mill Creek, WA 98012-1296
Phone: (425) 775-1311

Clark, Cowlitz, Klickitat, Lewis, Skamania,
Wahkiakum

Steve Manlow
2108 Grand Blvd.
Vancouver, WA 98661
Phone: (360) 696-6211

Clallam, Grays Harbor, Jefferson, Kitsap, Mason,
Pacific, Pierce, Thurston

Steve Kalinowski
48 Devonshire Road
Montesano, WA 98563-9618
Phone: (360) 249-4628

Dan Weiss

From: Barb Wood [Barb.Wood@noaa.gov]
Sent: Tuesday, August 05, 2003 2:50 PM
To: Dan Weiss
Subject: Re: Species Concurrence



Card for Barb Wood

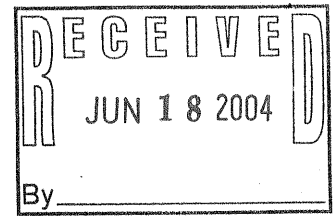
Hi Dan,

Yes, you are correct. No listed species...

Take care!

Dan Weiss wrote:

> Hi Barb,
> I was given your name as a contact person at the NOAA Fisheries. I am
> conducting a Biological Resources assessment for the Federal Highways
> Department along the Lake Wynoochee Road, in Grays Harbor County,
> Washington. The major rivers in the area of the project include the
> Wynoochee River, Anderson Creek, Save Creek, Coal Creek, Schafer Creek, and
> Neil Creek. From the NOAA Fisheries web page I have determined that within
> the project area I will expect to find the following species:
> * Lower Columbia River/Southwest Washington ESU Coho Salmon - listed
> candidate species
>
> Please concur or revise this list as appropriate and don't hesitate to call
> or email me with questions thank you for your time. Also please let me know
> if this request should go to a different representative from NOAA Fisheries.
> Thank you for your time.
>
> Dan Weiss CHMM
> Biologist/ Environmental Scientist
> Herrera Environmental Consultants, Inc.
> 2200 Sixth Avenue, Suite 1100
> Seattle, WA 98121
> (206) 441-9080 ext. 143
> Fax: (206) 441-9108
> www.herrerainc.com



State of Washington
DEPARTMENT OF FISH AND WILDLIFE

Mailing Address: 600 Capitol Way N • Olympia, WA 98501-1091 • (360) 902-2200, TDD (360) 902-2207
Main Office Location: Natural Resources Building • 1111 Washington Street SE • Olympia, WA

Dear Authorized Representative:

Thank you for requesting habitats and species information from the Washington Department of Fish and Wildlife (WDFW). Enclosed is a copy of the Sensitive Fish and Wildlife Information Release Agreement that has been agreed to by your organization and ours. Please inform all users about WDFW Releasing Sensitive Fish and Wildlife Information Policy - 5210 and Release Agreement for conditions regarding the use of the requested habitats and species maps and digital data products, and the resolutions that the information can be disclosed and displayed.

If you have any questions, please contact me at (360) 902-2543.

Sincerely,

A handwritten signature in cursive script that reads "Lori Guggenmos".

Lori Guggenmos, GIS Programmer
Priority Habitats and Species

Enclosures



Sensitive Fish and Wildlife Information Release Agreement

In the event that Information released under this agreement is deemed an "agency record" under the Freedom of Information Act (FOIA), the Washington Department of Fish and Wildlife (WDFW) considers the Sensitive Fish and Wildlife Information subject to this agreement to be confidential and privileged under that act. For instance, Exemption 4 of FOIA protects commercial and financial information. 5 U.S.C. § 552(b)(4). Release of this information would cause substantial harm to the competitive position of the person from whom the information was obtained and/or to the person owning property identified by the information. The resulting disadvantage to such person's competitive position would significantly impair WDFW's and the *Herrera Environmental Consultants, Inc.* ability to obtain this information in the future. Other exemptions to FOIA may also apply.

Sensitive Fish and Wildlife Information is defined according to the attached list of the species and habitats and associated finest display resolution allowable for their specific locations.

Redistributing or Displaying Sensitive Fish and Wildlife Information

1. WDFW is the exclusive owner of the Sensitive Fish and Wildlife Information subject to this agreement. The *Herrera Environmental Consultants, Inc.* shall in all respects treat it as the proprietary information of WDFW in accordance with all procedures reasonably necessary to protect WDFW's proprietary rights therein. Any unauthorized storage, display, reproduction, transmission, transfer, or dissemination of any portion of the information is strictly prohibited.
2. *Herrera Environmental Consultants, Inc.* shall not transfer any printout or other tangible form of Sensitive Fish and Wildlife Information to any person other than a *Herrera Environmental Consultants, Inc.* employee without first obtaining a written agreement from such person not to further disseminate the information.
3. Once this agreement is terminated the information may not be used for any purpose whatsoever. At or before the termination date, all copies of Sensitive Fish and Wildlife Information must be destroyed.
4. Sensitive Fish and Wildlife Information shall not be integrated into *Herrera Environmental Consultants, Inc.* files without prior approval from WDFW. Integration includes extracting information from the WDFW databases and including specific maps or GIS location information that meets Sensitive Fish and Wildlife Information definitions into any reports and/or files in digital or hard copy format.

Term of Agreement

The term of this agreement shall be *six (6) months* from the date of final signature.

The signing of this agreement indicates that *Herrera Environmental Consultants, Inc.* agrees to abide by the terms of this agreement to the extent allowable under the Freedom of Information Act at 5 U.S.C. § 552.

To the fullest extent permitted by law, *Herrera Environmental Consultants, Inc.* shall indemnify, defend and hold harmless WDFW, its officials, agents, and employees, from and against all claims arising out of the unauthorized disclosure or dissemination of Sensitive Fish and Wildlife Information being provided under this agreement. "Claim" as used in this agreement means any financial loss, claim, suit, action, damage, or expense, including but not limited to attorneys' fees, attributable for bodily injury, sickness, disease or death, or injury to or destruction of tangible or real property, sensitive habitat, including loss of use resulting there from. *Herrera Environmental Consultants, Inc.*'s obligation to indemnify, defend, and hold harmless includes any claim by *Herrera Environmental Consultants, Inc.*'s agents, employees, or representatives. *Herrera Environmental Consultants, Inc.* expressly agrees to indemnify, defend, and hold harmless WDFW for any claim arising out of or incident to the receiving and improper dissemination or displaying of Sensitive Fish and Wildlife Information.

Please return the signed Sensitive Fish and Wildlife Information Release Agreement form to Washington Department of Fish and Wildlife, Priority Habitats and Species, 600 Capitol Way North, Olympia WA 98501-1091. For questions about the form or to address special needs for information distribution not covered in the agreement call (360) 902-2543.

**Sensitive Fish and Wildlife Information Release Agreement**

FOIA Agreement with a Six month term of agreement

Organization Name Herrera Environmental Consultants, Inc.Authorized Representative Diane Hennessey Phone Number 206-441-9080Technical Contact(s) Amanda AzousMailing Address 2200 Sixth Ave, Seattle, WA 98121Description of information that you are requesting Environmental documentation for the US Department of Transportation
Federal Highway Administration Camp Grisdal Road improvement project # 02-01499-009.

I, The Authorized Representative Herrera Environmental Consultants, Inc., agree to the terms on the reverse side.

Authorized RepresentativeTitle EcologistName Diane HennesseySignature Diane HennesseyDate 5-26-04**Washington Department of Fish and Wildlife**Title BIS ProgrammerName Lori L. GuggenmasSignature Lori L. GuggenmasDate 6/15/2004

Effective Date: 8/21/02

Page: 1 of 6

POLICY - 5210

Cancels: WDW 1004

See Also: RCW 42.17.310 (1) (yy)

POL - 1005

Approved by: Jeff Koenings, Director

POL - 5210 RELEASING SENSITIVE FISH AND WILDLIFE INFORMATION

This policy applies to all WDFW employees and parties holding fish and wildlife information that the Director has determined as sensitive.

Definitions:

Sensitive Fish and Wildlife Information: As determined by the Director, fish and wildlife locational information displayed on maps or by other media (including video or print media, digital data, web-based information, press releases, public service announcements, public display items, and Department or journal publications) that meet the criteria for determining that fish and wildlife information is sensitive.

Criteria for Determining That Fish and Wildlife Information is Sensitive:

Fish and wildlife information is determined to be sensitive by the Director when the viability of a fish or wildlife population may be compromised by displaying the locations of a species or its habitat, and meets at least one (1) of the following criteria:

- A. The species has a known commercial or black-market value;
- B. The species behavior or ecology renders it especially vulnerable and has a history of malicious take;
- C. A known demand to visit, take, or disturb; or
- D. Extremely limited distribution and concentration of the species.

Additional fish and wildlife information considered sensitive, includes:

- A. Radio frequencies used in telemetry studies¹;
- B. Locational data generated by telemetry studies².

Sensitive Fish and Wildlife Information Release Agreement: An agreement that indicates that the signatory (person or organization) recognizes the appropriate guidelines for disseminating Sensitive Fish and Wildlife Information and has agreed to the provisions of this policy.

1. **Washington State Law Exempts Sensitive Fish and Wildlife Information from Public Inspection and Copying**
2. **Employees Shall Only Release Sensitive Fish and Wildlife Information to the Following Parties:**
 - A. Government agencies;
 - B. Tribes;
 - C. Researchers affiliated with an accredited college or university;
 - D. Private landowners (for their lands), or other parties with permission from the landowner; or
 - E. Agents of the above parties (e.g., consultants, realtors, etc.).
3. **Employees Shall Only Release Sensitive Fish and Wildlife Information in Conjunction With a WDFW Sensitive Fish and Wildlife Information Release Agreement**

¹Radio frequencies used in radio telemetry studies have been determined by the Director to be sensitive because they provide an increased opportunity to take or harass individual radio-tagged animals.

²The locational data generated by telemetry studies has been determined by the Director to be sensitive because disclosure may provide a facilitated advantage to hunters or collectors who receive this information.

- A. Releasing information covering an area **less than** thirty-six square miles (one Township):
 - (1) Employees will release Sensitive Fish and Wildlife Information covering an area less than thirty-six square miles (one Township) to the parties listed in Section 2 of this policy along with a request for a signed Sensitive Fish and Wildlife Information Release Agreement.
 - (2) Employees will grant subsequent releases of Sensitive Fish and Wildlife Information only to those parties from whom the signed Sensitive Fish and Wildlife Information Release Agreement has been obtained.
- B. Releasing information covering an area **greater than** thirty-six square miles (one Township):
 - (1) Employees will release Sensitive Fish and Wildlife Information covering an area greater than thirty-six miles (one Township) only to the parties listed in Section 2 of this policy after a signed Sensitive Fish and Wildlife Information Release Agreement has been obtained.

4. **Individuals and Organizations May Release Sensitive Fish and Wildlife Information Obtained From WDFW Subject to the Following Provisions**

- A. Parties holding Sensitive Fish and Wildlife Information obtained from the WDFW may release it for areas less than 36 square miles (one Township) only to the parties listed in Section 2 of this policy when such a release accompanies an agreement to abide by the provisions of this policy.
- B. Parties holding Sensitive Fish and Wildlife Information obtained from the WDFW shall not disclose or release it for areas greater than thirty-six square miles (one Township). Refer back to WDFW for these information requests.

5. **Employees May Release Sensitive Fish and Wildlife Information During Certain Governmental Activities**

The following activities constitute circumstances appropriate for the release of maps or other items that display Sensitive Fish and Wildlife Information. Any Sensitive Fish and Wildlife Information released in these circumstances shall abide by the other provisions of this policy.

- A. When working with citizen advisory committees.

- B. In public meetings and hearings, Sensitive Fish and Wildlife Information shall not be displayed at resolutions finer than 1:100,000. Maps or other media that display or refer to Sensitive Fish and Wildlife Information in accordance with this policy may not be reproduced or distributed. Answer specific questions only to the extent as provided in the provisions of this policy.
- C. Very small-scale maps (1:250,000) that display Sensitive Fish and Wildlife Information may be reproduced and distributed to the public.

6. **The Director, or a Designee, May Waive Sensitive Fish and Wildlife Information Release Requirements in Emergencies**

In the event of an emergency, as defined by the Administrative Procedure Act, the Director, or a designee, may waive restrictions on release of sensitive information to assist in minimizing negative impacts to fish and wildlife, to assess damage, or to otherwise assist in managing the emergency.

7. **Appendix A Lists Sensitive Fish and Wildlife Information**

APPENDIX A

SENSITIVE FISH AND WILDLIFE INFORMATION

Information concerning the specific locations of the species and habitats listed below is considered to be fish and wildlife information that has been determined to be sensitive by the Director. Locations are not regarded as sensitive if they are generalized to the Finest Resolution Allowable Without Release Agreement.

Note: Not all information related to a species or habitat may be considered sensitive. The information that is considered sensitive is indicated in the column titled "Information Considered Sensitive" in the table below. For example, the only Grizzly Bear information considered sensitive involves DEN SITES. The release of locations or other information related to DEN SITES would be restricted to the disclosure of *which* Township(s) have Grizzly Bear DEN SITES but not *where* they occur.

Species or Habitat for Which Information is Considered Sensitive	Sensitive Criteria*	Information Considered Sensitive	Finest Resolution Allowable Without Release Agreement
FISH/SHELLFISH			
Abalone	A,C	All	Township
AMPHIBIANS			
Tiger salamander	A	All	Township
REPTILES			
Western pond turtle	A,D	All	Township
BIRDS			
Northern goshawk	A,C	Nest sites	Section
Merlin	A,C	Nest sites	Section
Peregrine falcon	A,C	Nest sites	Township
Prairie falcon	A,C	Nest sites	Township
Sage grouse	C,D	Leks	Section
Sharp-tailed grouse	C,D	Leks	Section

Species or Habitat for Which Information is Considered Sensitive	Sensitive Criteria*	Information Considered Sensitive	Finest Resolution Allowable Without Release Agreement
Spotted owl**	B	All	Township
MAMMALS			
All Bats	B	Roost Sites	Township
Gray wolf	B	Den Sites	Township
Grizzly bear	B	Den Sites	Township
HABITATS			
Caves	B,C	All	Township

*See POL - 5210: Criteria for Determining Sensitive Fish and Wildlife Information.

**Data will be provided that indicates the presence of a spotted owl circle in a given section without a WDFW Sensitive Fish and Wildlife Information Release Agreement.

Diane Hennessey

From: Vaughan D Marable [vdmarable@fs.fed.us]
Sent: Friday, August 06, 2004 12:08 PM
To: dhennessey@herrerainc.com
Subject: Fw: sensitive species



En-4_RF_Sens_Ani mal_List_2004....
En-1_RF-Sens_Ani mals_S&M.xls
blank_project_revie w_form_1_14...
Deep_ck_BE_Ziegltr um_7_04.doc
pic05574.jpg

Diane, I don't think that I've sent this to you already?? If there is something else that you're looking for, please let me. I hope this helps.

Thanks

Vaughan D. Marable
Wildlife Biologist
Hood Canal Ranger District
Olympic National Forest
(360) 765-2230

----- Forwarded by Vaughan D Marable/R6/USDAFS on 08/06/2004 12:01 PM -----

Joan
Ziegltrum/R6/USDA
FS

07/28/2004 09:50
AM

To
Vaughan D Marable/R6/USDAFS@FSNOTES
cc
Susan D Piper/R6/USDAFS@FSNOTES,
Deborah
McConnell/R6/USDAFS@FSNOTES, Pat
Grover/R6/USDAFS@FSNOTES, Karen K
Holtrop/R6/USDAFS@FSNOTES
Subject
sensitive species

Vaughan - here's the sensitive animal list, which includes the mollusk species that were added to sensitive status. I'd also recommend that the analysis of the project also includes the former survey & manage species that were NOT added to sensitive. This is because there is currently a lawsuit on the latest ROD, and if it comes to a judge enjoining our projects (and basically going back to "survey & manage"), we'd have all the bases covered. So the survey & manage project form is good for that.

I'm also attaching a draft report I wrote for the Deep Creek road restoration NEPA (I still need to do some edits on this document - I ran out of time before my vacation, and I need to add mitigation measures for the invasive plants for this project).

So basically, we have 2 snails and 4 slugs on the Sensitive list (snails: Cryptomastix devia and Hoko Vertigo; slugs: Hemphillia glandulosa, H. burringtoni and H. malonei, and Prophysaon coeruleum). There are 11 former survey & manage species that were NOT added to the Sensitive list - nine are lichens and two are mollusks (Megomphix hemphilli snail and Deroceras hesperium slug).

Hope this helps - call if you have questions. - Joan

(See attached file: En-4_RF_Sens_Animal_List_2004.xls) (See attached file: En-1_RF-Sens_Animals_S&M.xls) (See attached file: blank_project_review_form_1_14_2004.doc) (See attached file: Deep_ck_BE_Ziegltrum_7_04.doc)

(Embedded image moved to file: pic05574.jpg)	JOAN ZIEGLTRUM, Ph. D., Ecologist Olympic National Forest 1835 Black Lake Blvd. SW, Suite A Olympia, WA 98512-5623 Tel. (360) 956-2320 FAX (360) 956-2330
warty jumping slug	email jziegltrum@fs.fed.us

EASTERN
WASHINGTON
UNIVERSITY

Cheney • Spokane

August 18, 2004

Mr. Delbert Miller, Tribal Historic Preservation Officer
Skokomish Tribe
N. 80 Tribal Center Road
Skokomish, WA 98584

RE: Camp Grisdale Road Improvement

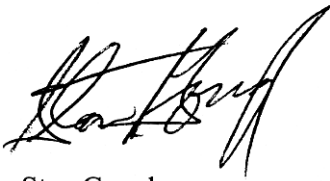
Dear Mr. Miller:

Archaeological and Historical Services (AHS), Eastern Washington University, is conducting cultural resources investigations for the Camp Grisdale Road improvement project in the Wynoochee River Valley (see included map). The proposed Federal Highways Administration, Western Federal Lands Highway Division project is to pave the existing gravel road from the end of the existing pavement about 17.5 miles south of Lake Wynoochee north to near the Wynoochee Lake dam.

To assist the with the environmental project planning process and regulatory compliance, AHS is conduct ing investigations including the identification of cultural resources that might be affected by the proposed project. In the course of project research we have examined a variety of records and literature at the Washington State Office of Archaeology and Historic Preservation, university libraries and archives, and local repositories. We recognize that the Skokomish Tribe may have cultural information concerning the proposed project area.

I write to elicit Skokomish Tribal participation in the cultural resources identification process. If you or other tribal members have information concerning traditional use areas that might be affected by the proposed project, we encourage the Tribe to contact us. We are aware that some of this information is of a sensitive nature and we are committed to working with the Tribe in a responsible manner, respectful of tribal concerns. Please contact me at your earliest convenience if you would like to discuss this project further. I look forward to hearing from you.

Sincerely,



Stan Gough
Director

Encl. project area map

Cc: The Honorable Gordon James

ARCHAEOLOGICAL AND HISTORICAL SERVICES
Cheney: 201 Isle Hall, Cheney, WA 99004-2420 • (509) 359-2239 • FAX (509) 359-6051
Tumwater: PO Box 14488, Tumwater, WA 98511-4488 • (360) 586-1040 • FAX (360) 586-1041

Eastern Washington University is committed to equal opportunity and affirmative action in employment.

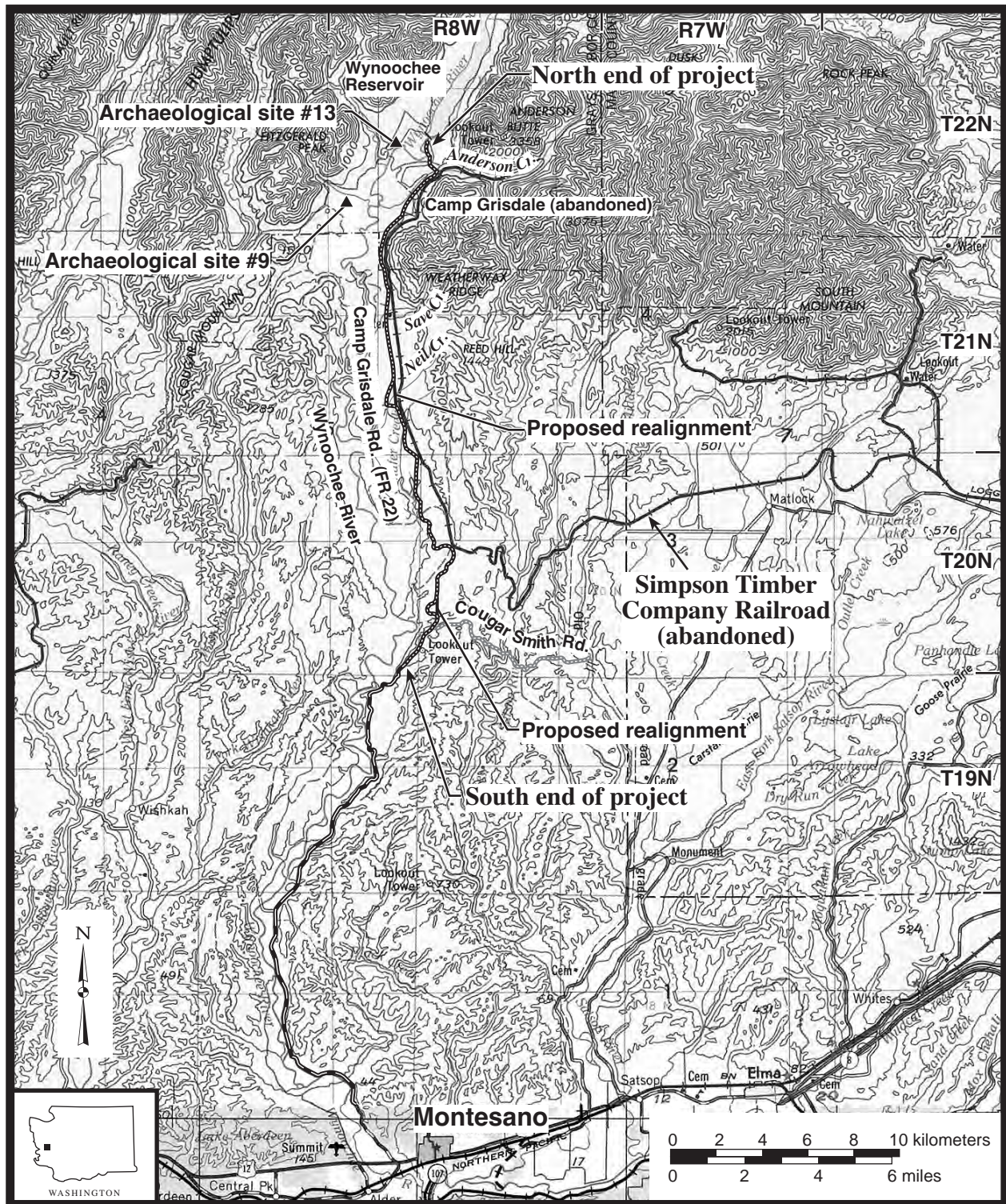


Figure 1. Camp Grisdale Road improvement project area APE showing the proposed realignments, previously recorded archaeological sites, and the Simpson Timber Company Railroad (adapted from Hoquiam, WA., (1958) and Seattle, WA., [1958, photorevised 1974] 1:250,000 USGS topographic maps).

MEMORANDUM

TO: Grisdale Road File

FROM: Stan Gough

RE: Tribal cultural resources informal consultation

DATE: August 31, 2004

Following up on my letter of August 18th, 2004, on Tuesday August 31, 2004 I spoke by phone with Mr. Delbert Miller (Skokomish Tribe, Tribal Historic Preservation Officer) regarding Tribal concerns, interest or comments regarding cultural resources investigations for the Grisdale Road project. Mr. Miller had seen my letter and was well acquainted with the Grisdale project area. We spoke about the project area, the Simpson Logging railroad that AHS personnel had documented, and Camp Grisdale. Mr. Miller did not express any cultural resources concerns with the project. He did express his sadness over the proposed road paving, but this was not in reference to any particular cultural resource of which I am aware.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Western Washington Fish and Wildlife Office
510 Desmond Dr. SE, Suite 102
Lacey, Washington 98503



In Reply Refer To:
1-3-06-F-0053

OCT 6 2006

Michael S. Traffalis
U.S. Department of Transportation
Federal Highway Administration
Western Federal Lands Highway Division
610 East Fifth Street
Vancouver, Washington 98661-3801

Dear Mr. Traffalis:

This document transmits the U.S. Fish and Wildlife Service's Biological Opinion (BO) based on our review of the proposed Camp Grisdale Road Improvement Project located in the Olympic National Forest and Grays Harbor County, Washington, and its effects on the marbled murrelet (*Brachyramphus marmoratus*) (murrelet) and its designated critical habitat in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*). Your December 15, 2004, request for formal consultation was received on November 21, 2005.

The enclosed BO concludes that the proposed action is "not likely to jeopardize the murrelet or adversely modify murrelet critical habitat." In addition, you requested concurrence with the determination that the proposed action "may affect, but is not likely to adversely affect" the Northern spotted owl (*Strix occidentalis caurina*), the bald eagle (*Haliaeetus leucocephalus*), the bull trout (*Salvelinus confluentus*) or bull trout critical habitat. Our concurrences for these effect determinations are provided in the attached document.

This BO is based on information provided in the November 15, 2005, Biological Assessment, the February 24, 2005, Environmental Assessment, the responses to comments sent via electronic mail on January 19, 2005, telephone conversations with Rochelle Byars of the Federal Highway Administration, and a June 15, 2006, field review. A complete administrative record of this consultation is on file at the U.S. Fish and Wildlife Service's Western Washington Fish and Wildlife Office in Lacey, Washington.

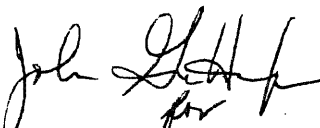
TAKE PRIDE[®]
IN AMERICA 

Michael S. Traffalis

2

If you have any questions about this memorandum, the attached BO, or your responsibilities under the Endangered Species Act, please contact Mark Hodgkins at (360) 753-9532, or John Grettenberger at (360) 753-6044.

Sincerely,

A handwritten signature in black ink, appearing to read "John S. Berg". The signature is stylized with a large "J" and "S".

Ken S. Berg, Manager
Western Washington Fish and Wildlife Office



STATE OF WASHINGTON

Department of Archaeology and Historic Preservation

1063 S. Capitol Way, Suite 106 • PO Box 48343 • Olympia, Washington 98504-8343
(360) 586-3065 • Fax Number (360) 586-3067

August 22, 2005

Mr. Michael Traffalis
Operations Engineer
US Dept of Transportation
610 East Fifth St.
Vancouver WA 98661-3801

In future correspondence please refer to:

Log: 082903-05-FHWA

Property: Camp Grisdale Road

Re: No Historic Properties Affected

Dear Mr. Traffalis:

Thank you for contacting the Washington State Department of Archaeology and Historic Preservation (DAHP). The above referenced project has been reviewed on behalf of the State Historic Preservation Officer under provisions of Section 106 of the National Historic Preservation Act. My review is based upon documentation contained in your communication.

We concur that no historic properties will be affected by the current project as proposed. If additional information on the project becomes available, or if any archaeological resources are uncovered during construction, please halt work in the area of discovery and contact the appropriate Native American Tribes and DAHP for further consultation.

Please note that DAHP requires that all historic property inventory and Archaeological site forms provided to our office be submitted in an electronic version using the Historic Property Inventory Database. If you have not registered for a copy of the database, please log onto our website at www.dahp.wa.gov and go to the Survey/Inventory page for more information and a registration form. Thank you for the opportunity to review and comment. Should you have any questions, please feel free to contact me.

Sincerely,

Russell Holter
Project Compliance Reviewer
(360) 586-3533
Russell.Holter@dahp.wa.gov

05 AUG 25 PM 12:12
MAIL ROOM
RECEIVED
FHWA-VANCOUVER

APPENDIX C

List of Resource Documents Available for Review

Appendix C—List of Resource Documents Available for Review at Western Federal Lands Highway Division and Forest Service Offices

AHS. 2004. Cultural Resources Investigations for the Camp Grisdale Road Project, Grays Harbor County. Short Report 817. Archaeological and Historical Services. Eastern Washington University. August 2004.

Herrera. 2003. Biological Resources—Wetlands, Fisheries, Wildlife, and Vegetation: Resource Studies for Camp Grisdale Road, Washington. Project Number PFH 208-1(1). Prepared for U.S. Department of Transportation, Federal Highway Administration, Western Federal Lands Highway Division. Herrera Environmental Consultants, Inc., Seattle, Washington.

Herrera. 2005. Camp Grisdale Road Biological Assessment. Project Number PFH 208-1(1). Prepared for U.S. Department of Transportation, Federal Highway Administration, Western Federal Lands Highway Division. Herrera Environmental Consultants, Inc., Seattle, Washington.

Herrera. 2005. Camp Grisdale Road Biological Resources Report. Project Number PFH 208-1(1). Prepared for U.S. Department of Transportation, Federal Highway Administration, Western Federal Lands Highway Division. Herrera Environmental Consultants, Inc., Seattle, Washington.

Herrera. 2005. Camp Grisdale Road Wetland Delineation Report. Project Number PFH 208-1(1). Prepared for U.S. Department of Transportation, Federal Highway Administration, Western Federal Lands Highway Division. Herrera Environmental Consultants, Inc., Seattle, Washington.

NOAA Fisheries. 2003. Endangered Species Act - Section 7 Consultation Biological Opinion & Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation Programmatic Culvert Replacement Activities in Washington and Eastern Oregon. Prepared for U.S. Department of Agriculture, Forest Service, by National Oceanic and Atmospheric Administration, National Marine Fisheries Service, September 2, 2003.

USDA Forest Service. 1996. Camp Road ROW Timber Sale, Environmental Assessment and Project Watershed Analysis. U.S. Department of Agriculture, Forest Service, Olympic National Forest. January 1996, revised April 1996.

USDA Forest Service. 1996. Upper Wynoochee Watershed Analysis. U.S. Department of Agriculture, Forest Service, Olympic National Forest. September 1996.

USFWS. 2003. Biological Opinion and Letter of Concurrence for Effects to Bald Eagles, Marbled Murrelets, Northern Spotted Owls, Bull Trout, and Designated Critical Habitat for Marbled Murrelets and Northern Spotted Owls from Olympic National Forest Program of Activities for August 5, 2003, to December 31, 2008. (FWS Reference Number 1-3-03-F-0833). U.S. Department of the Interior, Fish and Wildlife Service, Western Washington Fish and Wildlife Office, Lacey, Washington. August 2003.

WFLHD. 2004. Camp Grisdale Road, WA PFH 208-1. Summary of Public Open House. U.S. Department of Transportation, Federal Highway Administration, Western Federal Lands Highway Division, Vancouver, Washington. May 24, 2004.

WFLHD. 2004. Project Checklist for Camp Grisdale Road, WA PFH 208-1(1). Western Federal Lands Highway Division, Vancouver, Washington. May 2004.

WSDOT. 1999. Traffic Noise Analysis and Abatement Policy and Procedures. Washington State Department of Transportation, Olympia, Washington.

APPENDIX D

Comment Letters

Camp Grisdale Road Public Open House
WA PFH 208-1(1)
May 24, 2004

Comment Sheet

Name _____

Address _____



Your comments, concerns, suggestions, and questions will help us develop this project. Please leave it with us at this open house or mail it to us by folding this sheet. The mailing address is on the back. Please mail your comments to us by June 7, 2004.

The road improvement will be good for our
fire respondents from F.D. 2 as it will save wear
and tear on the trucks. On the minus side
it may increase visitation requiring more
responses. I hope the county intends to increase
law enforcement to match the increase
in traffic.

Camp Grisdale Road Public Open House
WA PFH 208-1(1)
May 24, 2004

Comment Sheet

Name _____

Address _____

Your comments, concerns, suggestions, and questions will help us develop this project. Please leave it with us at this open house or mail it to us by folding this sheet. The mailing address is on the back. Please mail your comments to us by June 7, 2004.

Cell phone - no use after 7 miles up the
Wynosade Valley

People drive 50 MPH+ on Grisdale Rd
now - with it paved they will go 60-70 MPH.
Bad Accidents will happen with no way to get help

How much larger will Co-Ho Campground
be enlarged? - Once the new Rd. gets in
the present Campground will not be able to
accommodate the campers - It doesn't
accommodate them now - it fills up by
Friday for Spring/Summer Holidays

How many deputies are scheduled to
patrol the Rd.

There are 53 Bad & Dangerous curves
from the beginning of the Wynosade to
Matzen Rd. - There need work and
straightened before the road work
is started?

Camp Grisdale Road Public Open House
WA PFH 208-1 (1)
May 24, 2004

Comment Sheet

Name: [REDACTED]

Address: [REDACTED]
[REDACTED]
[REDACTED]

Your comments, concerns, suggestions, and questions will help us develop this project. Please leave it with us at this open house or mail it to us by folding this sheet. The mailing address is on the back. Please mail your comments to us by June 7, 2004.

I am completely in favor of the Camp Grisdale Road project as it will facilitate access into the Wynooche Lake area for recreational purposes. It should also help to discourage some of the more unsavory characters who have been camping in the area because of it's relative remoteness.

Once the paved road to the lake is completed the next step would be to upgrade the gravel forest road # 2270 leading to trail # 874 which enters Olympic National Park. I haven't been up that way for a few years but understand that the upper reaches of the logging road are now impassable. Having that road usable would provide a short, if not the shortest, route between the I-5 corridor and the Park.

Thanks for the opportunity to comment,

[REDACTED]

Byars, Rochelle

To: [REDACTED]

Subject: RE: paving grisdale road

Thank you, [REDACTED] for your comments. We will carefully consider them during project development.

Rochelle Byars
Environmental Protection Specialist

-----Original Message-----

From: [REDACTED]@com1

Sent: Tuesday, May 25, 2004 8:50 PM

To: Byars, Rochelle

Subject: paving grisdale road

5/25/2004

My concerns with the paving of Camp Grisdale Road

- Emergency Services: From the Wishkah cut-off(10Mile marker apx.)- North there is no cell phone service; no communication for county and fire from 18 miles - North. There are a few spots but nothing consistent. The reason for my concern for this need is: The road as is has speeding and wrecks but the speed usually does not cause deaths because they don't get up that much speed and most people won't take their good cars up there, chuck holes and gravel. When the road is paved it will be a perfect place for the modern low-slung cars. Such as the Hondas and Mitsubishis. These cars go well over a 100 mph. Without the threat of getting caught, they will be road racing. Alcohol with speed Kills. Also needed are turnouts and some type of roadside service for those who underestimate the life of their tires and how far a gallon of gas will go, 33 miles is a long walk to get gas.
- Increased in fire hazard with no way to communicate this problem.
- Local road impact: More traffic on road, leading to more road trash, garbage dumping. Increased pavement maintenance on existing 17 miles of county road,
- Local citizen annoyance impact: With the increase of traffic (campers, hunters, fishermen) there will be more people stopping for directions, asking or not asking to use river access, asking to use

phone for emergency or non emergency (honey I forgot the beer, Its by the ice chest), etc. Maybe putting in a ranger station would be an option. And better signs. Some stating no service beyond this point, no cell signals past here, etc.

- Camping facility: The facilities that are in existence now (Coho Campground, and every side road that is open) is already full on the major holidays. When the road is paved and advertised in the federal bulletins, my rough estimates is 3 to 4 times increase in the first 2 years, where will the campers go. If you travel 33 miles of road to find no camping available what would you do? Go back down the road to town or camp in the first wide spot you come to. More garbage and human waste in the woods.
- Available drinking water and sanitation: the Coho has been shut down several times due to bad water. The restrooms around the Wynoochee Dam are closed most of the time.
- Increase in number of young people having Parties involving alcohol.
- Squatters: Who will be available to monitor the long term, 12 months at a time squatters.
- Environmental Impact: Every person that comes to the forest takes something home with them and leaves something. Some more than others.

What can be done: restricted areas and more rangers to monitor the people, day passes @ 5.00 a car and weekend passes @ 10.00. Camping passes etc. That would help pay the additional cost. Speed bumps to slow down traffic. Toll road.

I've visited a lot of National Parks in the Rockies and Cascades and they all have a couple of things in common. Careless, thoughtless, ignorant tourists and lots of Rangers to protect what hasn't been destroyed.

I love the idea that we would be able to drive up there with a nice smooth road, but we probably won't go.

Thank you,

[REDACTED]

Location 17 miles North of Montesano. Come up for a visit...
Please get copy to Mike and Darin and any of the Federal agencies that
might be able to help.

Byars, Rochelle

To: [REDACTED]

Subject: RE: WA PFH 208-1(1) PROJECT

Mr. Smith, thank you for your comment. We will be considering all comments received.

We are developing the project. The No-Build Alternative will be evaluated in the environmental assessment along with the Build Alternative.

The environmental assessment will be circulated in the fall of 2004 and a public meeting will be held at that time.

Again, thank you for notifying us of your concerns.

Rochelle Byars
Environmental Protection Specialist

-----Original Message-----

From: [REDACTED]

Sent: Thursday, May 20, 2004 3:29 PM

To: Byars, Rochelle

Subject: WA PFH 208-1(1) PROJECT

Hi Rochelle,

In the past when this matter has been brought up, the issue was safety. It hasn't changed any Rochelle. While there is a small amount of commercial traffic use compared to recreational traffic use, enough can't be said for what would transpire after the paving and straightening was complete.

The past/current condition of the road forces lower traffic speeds and thus keeps vehicle accidents in check without the aide of traffic patrol expense. I am in agreement about the conditions, and sympathetic with those who have provided the impetus for this project, however having some experience with the average mentality of driver that drives this road, it is not in the visiting public's best interest to make this a "drag strip in the middle of no where".

If I've read this announcement right, the department has made its mind up to proceed with the project and are putting aside the past warnings from others who have expressed the same concerns. Please consider me an objector of this project in light of ill situations it will bring to that area of travel.

Thank you for the opportunity to speak on this matter.

[REDACTED]
[REDACTED]

Byars, Rochelle

To: [REDACTED]

Subject: RE: gridale road

Thank you for your comment. Rochelle

-----Original Message-----

From: [REDACTED]

Sent: Thursday, March 24, 2005 9:11 PM

To: Byars, Rochelle

Subject: gridale road

[REDACTED] This road improvement project in my opinion is a very bad idea.

you might wonder why....I'll tell you. I live between the old wynoochee and wynoochee valley roads, about 11 miles north of montesano. I have been the captain of the Wynoochee fire station in the past.

first off the roadways preceding the project are only 30' right of ways....12' lanes on curvy roads without shoulders....Wynoochee station is a volunteer outpost.....montesano is the nearest emt staffed facility.....it is 35 miles away....if you make this into a hwy, you are looking at 30 minute response time

the GH sheriff's office is already overburdened, so you add more area for them?

what about the people who live along the road prior to the project? you are turning their front yards into a highway.....

your org proposes to increase access to a remote area, you will forever ruin remote areas by providing easy access....this has been seen for years in other locations.

what is likely is that the government, in it's own shortsightedness will create a mess for the locals to sort out.

this all makes me no difference, as I plan to open a RV park in 2006.....my pockets will be full of money due to this expansion project.....I will profit from this, but i do feel guilt as your project will fill my pockets....and exploit a finite recourse that can never be reclaimed.....

all in all, your project will forever change a wild country into a tame one....once it is gone, it will be forever exploited!

simple simple fools.....

progress has it's own consequences

Byars, Rochelle

From: Byars, Rochelle
Sent: Wednesday, March 30, 2005 8:26 AM
To: [REDACTED]
Subject: RE: gridale road

I'm sorry. I should have explained that we wait until the comment period ends to fully evaluate and answer comments. I wanted to acknowledge that we received your comment. We will respond to your comment after we evaluate all comments. Rochelle

-----Original Message-----

From: [REDACTED]
Sent: Tuesday, March 29, 2005 8:29 PM
To: Byars, Rochelle
Subject: Re: gridale road

that's it?

your agency if forever changing a remote area into an easily accessible one.....you placed the EMS response to already stretched and underfunded agencies.....

this terrible idea must be shelved

----- Original Message -----

From: Byars, Rochelle
To: [REDACTED]
Sent: Friday, March 25, 2005 9:05 AM
Subject: RE: gridale road

Thank you for your comment. Rochelle

Grisdale Road Public Open House
WA PFH 208-1(1)
Wednesday, March 23, 2005

Comment Sheet

Name _____

Address _____

Your comments, concerns, suggestions, and questions are important. Please leave it with us at this open house or mail it to us by folding this sheet. The mailing address is on the back. Please mail your comments to us by April 6, 2005.

Concerns:

- Impacts to WSPU budget for increased enforcement re: poaching, fishing violations, etc. due to increased ease of access to upper watershed

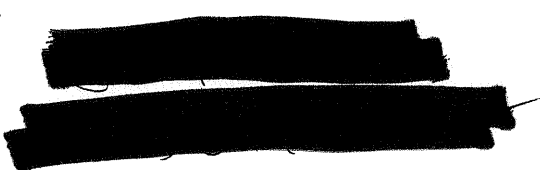
- Ongoing maintenance of infrastructure
- interested in schedule for timely maintenance & who has responsibility for what

- Benefits to paving road are cleaner air during dry periods, boost in access and WSPU wants to increase hunting & fishing & watchable wildlife opportunities (still will increase enforcement costs) WSPU might need to tap into dollars from tourism & or maintenance to enforce - we have no taxing authority like local government.

(over)

WDFW recently learned that the USACE pulled funding for Wynoochee Dam fish passage. We have been working on this project for years. So... it is a blow to our values & goals to find out that the road is being paved at a cost of \$14 million, when we can't get \$ to pass fish through the dam without killing them. I realize the pots of money come from different authorities - but there is a very difficult irony in the situation.

Thanks for listening. If I can be of any assistance give me a jingle.



Federal Highway Administration
Western Federal Lands Highway Division
610 East Fifth Street
Vancouver, WA 98661

Federal Highway Administration
Western Federal Lands Highway Division
ATTN: Rochelle Byars
610 East Fifth Street
Vancouver, WA 98661

Byars, Rochelle

From: Byars, Rochelle
Sent: Thursday, April 07, 2005 9:10 AM
To: [REDACTED]
Subject: RE: Comments for Camp Grisdale Road project

[REDACTED] Thank you for your comments. After receipt of all comments and evaluation of them, we will provide a response to your concerns.

Rochelle Byars
Environmental Protection Specialist

-----Original Message-----

From: dschwick@techline.com [mailto:dschwick@techline.com]
Sent: Wednesday, April 06, 2005 4:33 PM
To: Byars, Rochelle
Subject: Comments for Camp Grisdale Road project

Public comments for Camp Grisdale Road Improvements Project

April 6, 2005

We appreciate the opportunity to participate in the public process offered by the federal government for this project. While on the surface this project appears to help the area by paving a very long forest road and giving this paved road to our county, a gift isn't always beneficial when everything is considered. A Ferrari for my son might be the greatest thing he could imagine, but I doubt any of us would think so a year later after the tickets, insurance costs and life style change is evaluated.

For this project a cost benefit study should be preformed to understand the affects of transferring responsibility and direct and indirect, short and long-term maintenance costs for the Camp Grisdale Road from the federal government to Grays Harbor County. Without some miracle we have yet to imagine, it seems unlikely our rural county can afford the long term costs for all the impacts listed in this project proposal to offset the costs this road and the other hundreds of miles of roads in our county requires. Why would our community want our federal government to transfer this responsibility without securing a funding source that will prevent a drain on current county financial responsibilities? Over the last 20 years the federal has continued to shrink from their financial responsibilities to states and communities and this appears to be another example of this practice.

Does the County have the public services to police and service this area? A nicely paved road is an invitation for an old kind of youth thrill, racing. Worse yet cell phones don't work well there so for emergencies you just wait. Then we invite the public with a nice paved road but no services like a gas station, food, water or restrooms are provided. People who travel a gravel road have a different expectation and are usually more prepared.

At the public meeting I asked how many years the proposed cost of \$14 million for a paved road and all the improvements would pay for maintaining and enhancing the current gravel road. That information should have been researched and provided for comparison because public agencies must consider both long and short term costs in their decisions. The federal government has a responsibility to fix the environmental problems they have listed even without the upgrade to the road such as ongoing soil erosion, reduction in the amount of sediment delivered to wetlands, etc.. If this project is approved our group would like to see the details of the proposed wetland mitigation that must

consider the best available science recommendations and guidelines that our Washington Department of Ecology has just released for wetlands.

A mitigation plan should be prepared for the negative affect to our wildlife that is documented in the project proposal. A paved road will bring more people into this lightly used area and there will be a negative impact and harm to all species especially endangered. When I mentioned this to a biologist at the public meeting in Montesano, she said, "Increased public use doesn't impact wildlife. I've never seen a study that documents this." I was offended and utterly amazed that a biologist would say this. It was insulting! Michelle Byars was her name, and I hope this attitude is corrected. If this project were approved I would recommend a portion of the area in very good habitat condition be set aside and identified as a protected area for wildlife. Possibly a small valley with an intact forest, possible some old growth, intact streams and wetlands, and without roads to provide wildlife a haven from the impacts that increased traffic and people will have from this project. This protected mitigation area should be eliminated from timber harvest plans. What the gravel road provides, the paved road takes away. This is one reason many hunters and fisherman do not support this project, my boss being one of those. They know the remote areas are the best place to find the best that nature offers. If a gravel road takes more time but fewer people visit, that translates into better fishing and hunting for everyone. The hidden areas, lightly visited streams: Repeat because it is worth it: What the gravel road has protected, the paved road will undo.

The business case has been made that eco-tourism provides millions of dollars to rural areas like Grays Harbor and this paved road isn't the benefit we need to bring these people in. Leave the road as natural as possible, fix the environmental problems, and increase the marketing to educate people what this wonderful area has to provide. The federal government should fix the problems listed in the project plan, keep the road in their inventory, and help Grays Harbor market a wonderful area to provide the benefits this plan could offer without the transferring to our rural county a financial drain on our economy.

Thank you for the opportunity to comment,

[REDACTED]

Cc: Senator Patty Murray
Senator Maria Cantwell

This mail sent through IMP: <http://horde.org/imp/>



OLYMPIC FOREST COALITION

March 16, 2005

Rochelle Byars
Federal Highway Administration
610 East Fifth Street
Vancouver, Washington 98861-3801

Re: Camp Grisdale Road Improvements Environmental Assessment

Dear Ms. Byars:

Hello. Thanks for the opportunity to comment on the Grisdale Road EA. Olympic Forest Coalition (OFCO) was established in 2002 as a non-profit organization, whose mission is to advocate for the protection and restoration of the Olympic Peninsula's forested ecosystems. Much of our focus and work are devoted to monitoring and positively influencing activities occurring on Olympic National Forest (ONF) lands, particularly new road construction, hence our interest in the Grisdale Road project.

OFCO is supportive of some aspects of this proposed project, though we have serious concerns in other respects which will be elaborated below. On the positive side, we appreciate and encourage the following anticipated benefits of the project: 1) a reduction in ongoing soil erosion, 2) a reduction in airborne sediment; 3) reductions in the amount of sediment delivered to wetlands, streams, their buffers, upland areas, and vegetation, and 4) improved hydraulic connectivity and fish passage improvements. Moreover, FHWA's rationale for paving FSR 22 and the 0.8 mile segment of FSR 2294 appears adequate, given the mix of industrial and recreational traffic south of the national forest boundary, as well as the aforementioned sedimentation problems throughout the project corridor.

Our concerns have to do with the northernmost four miles of this project, where it crosses into ONF lands, onward to the Wynoochee Bridge terminus. Although we read that FHWA would not engage in significant re-routing of the road corridor on ONF lands, and has reduced the design speed on FSR 2294 in order to minimize impacts on adjacent tree cover, we firmly oppose the expected removal of 2.3 acres of old-growth forest that would result from widening the road and addition of two-foot-wide shoulders. Much public emphasis and resources have been applied to protecting these native forest stands for the express purpose of their superb wildlife habitat, through designation of the Late Successional Reserve (LSR) and Critical Habitat for the threatened marbled murrelet.

FHWA contends that the loss of these 2.3 acres of old-growth would produce "only a minor amount of additional cumulative impact in the watershed, since thousands of acres of forest habitat remain in the watershed." The agency adds that the clearing of the 2.3 acres in question "is small... compared to the area of late successional forest within 0.5 mile of either side of the road (325 acres), and is small in comparison to that removed by other activities in the area." In this context, the EA's cumulative effects analysis is inadequate, in that it largely disregards the exceptionally precarious and declining status of resident, ESA-listed species. The current risk of extirpation for the marbled murrelet is in part the result of repeated, relatively small-scale habitat incursions over the past several decades, similar to that being

proposed for the Grisdale Road project. FHWA seems to be dismissing the likelihood of a probable "death by a thousand cuts" outcome here.

The Northwest Forest Plan specifically prohibits the logging of trees over 80 years of age within LSRs, as would occur in the EA's preferred alternative. FHWA does not specify how it intends to subvert this protective regulatory mechanism without repercussion. The act of upgrading a rural road, without human residents, is clearly insufficient to warrant undermining a central lynchpin of the Northwest Forest Plan. Similarly, the destruction of a portion of Critical Habitat Unit WA-03 cannot occur simply because FHWA wills it so. In its mandate to comply with the Endangered Species Act, the onus is on FHWA to demonstrate how its actions within Critical Habitat will further the *recovery*, and not simply prevent the extinction, of the marbled murrelet. Obviously, the preferred alternative would only harm the murrelet's chances of recovery.

As such, the preferred alternative for the Grisdale Road EA may well cross a legal threshold. We call your attention to the 9th Circuit Court of Appeal's recent ruling in *Gifford Pinchot Task Force v. USFWS*. In that case, the court ruled that the U.S. Fish and Wildlife Service's regulations for issuance of biological opinions (BiOps) were flawed. FWS had issued BiOps for several projects on public lands involving designated Critical Habitat, therein allowing their implementation, yet had relied on an erroneous standard of merely preventing the extinction of the listed species. The court's conclusion, however, was that BiOps involving Critical Habitat must be based on the species' recovery, with the goal of eventual delisting. Additionally, the court did not allow FWS to utilize the presence of nearby suitable habitat under a separate, non-ESA designation (LSR) as justification for the degradation of Critical Habitat.

To date, FWS has yet to revise its BiOp regulations to comply with the 9th Circuit's order. Consequently, FHWA's reliance upon the two 2003 BiOps addressing "routine" activities on Olympic National Forest is questionable. Given the ruling in *Pinchot*, the two BiOps referenced in the EA may now be illegal, and so we request that this consultation process with FWS for the Grisdale Road project be reinitiated. It will be the responsibility of FHWA to explicitly demonstrate how the removal of Critical Habitat for road reconstruction will not hinder the *recovery* of the murrelet. In consideration of your reported government findings that the murrelet is declining at a rate of four to twelve percent annually, that the older forests they depend upon are now scarce and heavily fragmented, and that edge effects (e.g., from roads) increase the susceptibility of chicks to predation, such a task is expected to be highly difficult.

As reported in the EA, at least three marbled murrelet occupied sites exist within the project corridor, as do 40 acres of Critical Habitat. Along with the designated LSR, these important forest stands would be subject to inappropriate vegetation removal as part of the preferred alternative. Overall, it is stated that the proposed project "may affect, likely to adversely affect marbled murrelets." On pages 5-15 and 5-16, the EA describes several intended conservation measures for the Grisdale Road project, extracted from the earlier BiOps mentioned above. However, again, the subsequent ruling by the 9th Circuit Court in *Pinchot* may well render these provisions outdated.

Returning again to the topic of cumulative effects, on pages 5-54 and 5-55, FHWA appears to make an attempt to rationalize the proposed clearing of 2.3 acres of old growth by stating that, outside the project corridor, "old growth forest communities are and will be eliminated." The EA then adds that "a substantial decrease in old growth habitat... is expected to continue..." This assertion is entirely incorrect. To begin with, there is essentially no old growth remaining on Green Diamond's private timberlands. At the same time, ONF ceased all planning for old growth timber sales after the murrelet was initially listed; has logged no old growth whatsoever in the Wynoochee Watershed in well over a decade; and has not even a thinning sale in second-growth forest planned on the Wynoochee currently. Consequently, FHWA's plans to remove old-growth in order to widen the Grisdale Road stands in stark and unfortunate contrast to the dominant management regime of the past decade.



When taking into account the major factors associated with the Grisdale Road project on ONF lands, it appears that an Environmental Impact Statement is in order. In evaluating the project's intensity, the following items are relevant to whether an EIS is needed in this case: 1) impacts upon the unique characteristics of the geographic area such as proximity to ecologically critical areas; 2) the degree to which the action may establish a precedent for future actions with significant effects; 3) whether the action is related to other actions with individually insignificant but cumulatively significant impact on the environment; and 4) the degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act. OFCO's perspective is that the Grisdale Road project requires a full EIS prior to implementation.

One noteworthy problem with the Grisdale Road EA is the lack of a full range of alternatives. The public is offered only the preferred alternative and the no-action alternative. Given the concerns expressed above, we urge FHWA to develop and adopt a third alternative that incorporates a more ecologically sensitive, logical, and legally defensible approach. This additional alternative would vary from the preferred alternative only in regard to the northernmost four miles of the project, where it crosses ONF lands. On those four miles, we request that FHWA complete their paving and fish passage improvements **within the existing road prism**, without widening, realignment, or clearing for sight distance, thereby adhering to the statutory and regulatory protections inherent in the designated Critical Habitat and LSR. The removal of any old-growth forest in the project corridor is unacceptable, and likely challengeable. Please give serious thought to this modest request.

Utilizing the existing road prism on the upper four miles of the project carries other potential advantages with it. Foremost, it will reduce the incidence of wildlife mortality from collisions with automobiles, which is especially important when considering the abundance of Roosevelt elk in the project area. Second, in lowering automobile speeds, passengers will be allowed a better opportunity to observe and enjoy the forested scenery on their way to Wynoochee Lake. A winding road through the forest provides a far more pleasurable, relaxed driving experience for visitors than does a suburban-style quasi-highway. Risk from the mix of recreational and logging truck traffic is much less of an issue north of the ONF boundary, where industrial use is infrequent in comparison to Green Diamond's timberlands to the south. The EA should have devoted (and would do so in an EIS) more attention to the differing and lesser traffic demands on the ONF portion of the project. This omission may be remedied in a subsequent decision by FHWA to utilize only the existing road prism, without clearing of native forest, on ONF lands.

OFCCO looks forward to tracking this project to its conclusion. Thank you for your time and efforts.

Regards,



OFCCO Board of Directors

Subject: Camp Grisdale Road Project

Hi Rochelle,

I am a Fish and Wildlife Biologist with the State Fish and Wildlife Dept (WDFW) and I received a copy of the availability of the environmental assessment and public open house.

These are my concerns:

Will all of the stream crossings (culverts) be assessed for fish passage using WDFW's "Fish Passage Barrier Assessment Protocol"?


With the number of crossings they will be dealing with, it is extremely important they upgrade or replace based on this protocol.

In addition, I observed the road work being done this summer on that road and saw some poor erosion control and runoff handling practices. What kind of oversight of construction practices will be available?

I don't have any problem with paving this stretch of road because it will reduce siltation of the streams. However, the environmental assessment seems to minimize impacts. There will be more traffic with the road improvements and this will create impacts to the recreation area and of course noise levels will increase from the higher speeds, especially from log trucks. Surface runoff will increase with pavement. There is also potential for more homes to be built along this road due to improved vehicle access. This would create a whole new set of impacts.

I'm not trying to be negative about this project, but just wanted to make sure these things are addressed adequately.

Thanks for the opportunity to comment.



Grisdale Road Public Open House
WA PFH 208-1(1)
Wednesday, March 23, 2005

Comment Sheet

Name

Address

Your comments, concerns, suggestions, and questions are important. Please leave it with us at this open house or mail it to us by folding this sheet. The mailing address is on the back. Please mail your comments to us by April 6, 2005.

Thank you for hosting the Montesano session. One concern which needs to be addressed is the impact which will occur to elk + deer impacted by the higher speeds which vehicles will travel after the highway is paved. This will result in direct mortality.

Increased traffic and numbers of visitors to the area will have some positive impacts to the local economy but will also result in more poaching of deer, elk and other wildlife. Both of these losses to deer and elk populations may effect the Wynoochee Dam Mitigation project. It is known that elk herds maintained by the mitigation project cross this road regularly and will be impacted by paving this road. This will result in losses to elk + deer and increased complaints to Wa. Dept of Fish and Wildlife. It will also result in higher management costs to WDFW and may

Impact the Quinault Tribe and the Skokomish
tribal hunting which occurs in the area.

This project puts additional costs on WDFW
for enforcement and wildlife management with
no funding to address the issues created.

Thank you for the opportunity to comment.

Federal Highway Administration
Western Federal Lands Highway Division
610 East Fifth Street
Vancouver, WA 98661

**Federal Highway Administration
Western Federal Lands Highway Division
ATTN: Rochelle Byars
610 East Fifth Street
Vancouver, WA 98661**

Byars, Rochelle

From: [REDACTED]
Sent: Wednesday, March 02, 2005 8:22 AM
To: Byars, Rochelle
Subject: RE: Camp Grisdale Road Project

Thanks for the information, Rochelle. I accessed the EA on your website. Knowing you are on top of this makes me feel more comfortable. If I have any more questions, I will contact you.

Thanks
[REDACTED]

>>> "Byars, Rochelle" <Rochelle.Byars@fhwa.dot.gov> 03/01/05 3:03 PM >>>
Thank you [REDACTED]. Would you like me to send you a copy of the EA? It is on our web site, Western Federal Lands Highway Division. The site is on the notice of availability.

We assessed fish habitat, fish actual presence, or potential for presence, and barriers for all the streams that Camp Grisdale Road Crosses. Based on the data, we are evaluating replacing 8 culverts with fish passage culverts.

Erosion control plans will be included in the construction plans. We always obtain an NPDES permit and if erosion control is not working, we are in violation of the permit. I will emphasize the importance of active erosion control to the project engineers. They are the ones responsible for implementation of erosion control. If you ever identify improper erosion control on our projects, please notify me immediately so that I can work with the contractors to rectify the situation.

The existing road is considered an impervious service because of its compaction. The impervious surface will increase by 17%. We will rock line slopes with grades steeper than 4% to slow water. We will also route ditches into upland areas before they route water into streams. The design to handle runoff will be improved over the current design. As you say, the project will reduce sediment, not only in streams, but in wetlands and uplands. In the summer, dust on plants can be quite thick. We believe that this will be a large improvement over existing conditions.

We cannot forecast what the increase in traffic will be. Noise from logging trucks will increase slightly. Better access to recreation areas will potentially increase recreational use.

The land adjacent to the project portion of road is owned by Green Diamond Resources and the US Forest Service. No homes will be built in the forest. Green Diamond land is under Grays Harbor zoning. If Green Diamond wishes to develop the land, it must comply with county ordinances.

I hope this answers your questions. We are trying to be responsive to environmental concerns and believe that this project will benefit the environment through reduction of sediment and construction of fish passages.

If you have more questions, please contact me.

Rochelle Byars
Environmental Protection Specialist

-----Original Message-----
[REDACTED]

Sent: Tuesday, March 01, 2005 2:02 PM
To: Byars, Rochelle
[REDACTED]

These are my concerns:

Will all of the stream crossings(culverts) be assessed for fish passage using WDFW's "Fish Passage Barrier Assessment Protocol"?

With the number of crossings they will be dealing with, it is extremely important they upgrade or replace based on this protocol.

In addition, I observed the road work being done this summer on that road and saw some poor erosion control and runoff handling practices. What kind of oversight of construction practices will be available?

I don't have any problem with paving this stretch of road because it will reduce siltation of the streams. However, the environmental assessment seems to minimize impacts. There will be more traffic with the road improvements and this will create impacts to the recreation area and of course noise levels will increase from the higher speeds, especially from log trucks. Surface runoff will increase with pavement. There is also potential for more homes to be built along this road due to improved vehicle access. This would create a whole new set of impacts.

I'm not trying to be negative about this project, but just wanted to make sure these things are addressed adequately.

Thanks for the opportunity to comment.

[REDACTED]

Grisdale Road Public Open House
WA PFH 208-1(1)
Wednesday, March 23, 2005

Comment Sheet

Name

Address

Your comments, concerns, suggestions, and questions are important. Please leave it with us at this open house or mail it to us by folding this sheet. The mailing address is on the back. Please mail your comments to us by April 6, 2005.

• I want this project.

• I was the editor @ The History Camp Grisdale

Beet up cars, take our lives into danger
to drive the existing Road. We need it paved
to improve safety.

- Safety BIG ISSUE.

- speed limit is uncontrolled so
how will this be handled? It's high now so I
don't think much higher speeds will occur.

- opening Valley to more people is better


- Mot. cycle Rider, can't use Road
now but after paved will be a great
ride.

- open up Area to all not just people
w/ 4x4 cars.

WANTS to see a good paved Road.

update website

WANTS to be on mailing list (prefer e-mail)
m22071NKE@yahoo.com



Federal Highway Administration
Western Federal Lands Highway Division
ATTN: Rochelle Byars
610 East Fifth Street
Vancouver, WA 98661

RE: Proposed Camp Grisdale Road Improvements

Dear Ms. Byars:

I am writing to urge your agency to CANCEL plans to widen and pave the Grisdale Road, from the end of pavement on Wynoochee Valley Road to the Wynoochee Dam. I am strongly opposed to this project for the following reasons:

1. Cost: At \$1 million per mile, for a total of \$14 Million, this project is a waste of taxpayers' money. For a small fraction of this amount, adequate maintenance of the existing road could be managed annually in perpetuity. Paved roads also require maintenance, as they crack, get potholes and slump. No mention is made of the cost of maintenance of the proposed road. If my county, Grays Harbor, assumes responsibility of this new road, commissioners will have to make provisions for its maintenance. I am opposed to any new, unnecessary expenditures for the county, especially since county officials are always telling the public how strapped the county is for funds.
2. It is a mistake to list, as an advantage of the project, the repair of culverts and elimination of fish passage barriers. All landowners and governments ARE REQUIRED by law to correct fish barrier situations on their road crossings. Correcting fish barriers should occur anyway, whichever alternative gets selected. The so-called No Action Alternative should have included plans to correct all the fish passage barriers, since your agency is now aware of them. It is not really a No-Action Alternative.
3. PUBLIC SAFETY: Widening and paving to create a 40 mph. highway will only serve to increase the danger for the public traveling on that road. Logging trucks, now forced to travel at a reasonable speed because of the road conditions, will speed up, endangering the public. The public will also increase its speed to unsafe levels. I live on a county road with a 40 mph. speed limit but most vehicles, including large trucks, regularly travel at 60 mph, most assuredly an unsafe speed. Enforcement of the speed limit is virtually nil on my road and this road is just outside of a town. On this proposed new road, drivers, especially logging truck drivers, will inevitably drive at unsafe speeds. I predict that the accident rate and the rate of injuries and fatalities will increase if this road becomes wider and paved.
4. SPOTTED OWL AND MARBLED MURRELET HABITAT: It is unconscionable for a federal agency to deliberately sacrifice any habitat for these two endangered species,

especially in light of the fact that the Spotted Owl population is really in jeopardy and the Marbled Murrelet's status is not as well understood as previously thought. All existing habitat for these two old-growth dependent species needs to be maintained at this point in history until selected forest stands can mature to the point of replacement of some existing habitat. There is no way to mitigate the proposed loss since it takes about 200-250 years to grow replacement habitat with the proper old-growth characteristics. Clearing of any large, mature trees should be assiduously avoided.

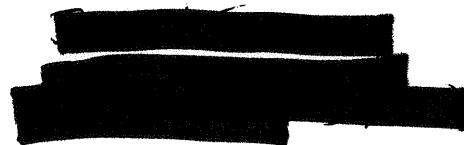
5. WATER QUALITY, CULVERTS AND FISH PASSAGE: It is true that unpaved roads contribute sediment to streams they cross, especially when used repeatedly by heavy vehicles in wet weather. I have an ALTERNATIVE PROPOSAL which should help greatly in addressing this problem. Instead of paving the entire road, I recommend replacing all the culverts that are undersized and/or fish passage barriers and paving the sections of road within 100 feet of each stream crossing. The cost for this alternative would be much less than the one proposed and it would greatly help in solving the water quality and fish issues. This approach would also make unnecessary the habitat destruction associated with widening of the road.

6. WILDLIFE, DEVELOPMENT AND WILDERNESS EXPERIENCE: One county official said he anticipated increased development along the newly paved road, opening another portion of the county. However, the document presented to the public stated that "Wildlife is abundant in the Camp Grisdale Road project corridor... due to the highly diverse wetland, riparian, and forest wildlife habitats... Typical species... include... Roosevelt elk, black-tailed deer, black bear, bobcat, cougar, coyote, raccoon, beaver, mountain beaver, skunk, porcupine, forest bat, Douglas squirrel, Townsend's chipmunk..." Permanent human development ALWAYS means less room and more danger for wildlife except for those species that adapt well to human encroachment. Most wildlife WILL suffer as a consequence of this project. The other factor that is being sacrificed by this project is the semi-wilderness experience this road provides. Not everybody can hike deep into the Olympics, but this road, as it exists now, eases access for most people to a fairly remote area. They can travel through the forest, with trees nearby, at a pace that allows them to really see the forest. That experience is greatly compromised by the prospect of taking out the trees alongside the road and making it a speedy highway whereby the passing forest is but a blur. Nearly everyone can negotiate this road as it stands today. I have a small car (Honda Civic) and I have no trouble getting to Wynoochee Dam and the campground.

PLEASE, PLEASE KILL THIS PROJECT, except for the culvert replacement discussed above. This is a bad expenditure of my tax moneys and has many more negative aspects than benefits for the Olympic Peninsula and the people who choose to live near it.

Thank you.

Sincerely,

A large, solid black rectangular redaction mark covering the signature area.A large, solid black rectangular redaction mark covering the signature area.

Byars, Rochelle

To: Kyle Noble
Subject: RE: Grisdale Comment Call

[REDACTED]

-----Original Message-----

From: Kyle Noble [mailto:knoble@fs.fed.us]
Sent: Friday, September 02, 2005 1:45 PM
To: Byars, Rochelle
Subject: Grisdale Comment Call

Rochelle,
There was one more thing that I wanted to pass along.
I received a phone call earlier this week from a person interested in the
Grisdale Project.
She was extremely supportive of the project and "can't wait" for it to
happen. In fact, the reason for her call was to find out when the project
would be completed. I told her that I would contact you and that you could
put her on the mailing list.
Her name and contact info is as follows:

[REDACTED]

Kyle Noble
Olympic National Forest
Lands & Special Uses
(360) 956-2332

Byars, Rochelle

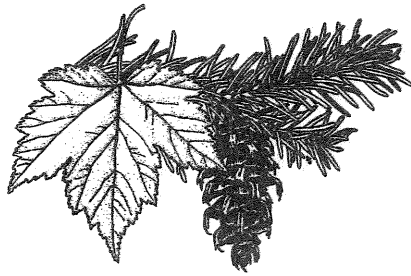
From: Mike Whelan [Mwhelan@co.grays-harbor.wa.us]

Sent: Friday, April 15, 2005 4:08 PM

To: Byars, Rochelle

Rochelle--thank you for your e-mail of April 15, 2005 in regard to law enforcement services in the Grisdale area. Given the state of county finances and the continual budget cuts the sheriff's office has experienced I do not see us adding any additional manpower to provide more services to the Grisdale area. As we receive calls for service we prioritize our response based on long established criteria. I do not see this changing because the road to Grisdale is going in. We will respond immediately based upon the threat to lives, personal safety or property. All other calls will be evaluated as to when we will respond or if we will respond. I hope this answers any questions you may have in regard to law enforcement in the Grisdale area.

Mike Whelan, Sheriff
Grays Harbor County



Washington Native Plant Society
Appreciate, Conserve, and Study Our Native Flora

6310 NE 74th Street, Suite 215E, Seattle, WA 98115
(206) 527-3210


March 28, 2005

Reply to: [REDACTED]
[REDACTED]
[REDACTED]

To Ms. Rochelle Byers
Federal Highway Administration
610 East Fifth ST
Vancouver, WA 98861-3801

Thank you for sending information to the Washington Native Plant Society and its South Sound Chapter, of which I am ~~Chairman~~ ^{Chairman}. Our South Sound Chapter covers a broad area of South Puget Sound. Pierce, Thurston, Mason, Grays Harbor and Lewis Counties.

We commented when the highway improvements to the route from Camp Elvidale to Wynoochee ^{Dam} Bridge were first proposed several years ago. The native plant society not only is concerned about the preservation of native plants, but our members are becoming increasingly concerned about detrimental invasive plants, which have been allowed to go out of control.

There is considerable Scots broom along this route. It has been there for some years, so there will be a long-lived seed bank, viable for 50 years or more. Every precaution should be taken not to spread the contaminated dirt. It should not be moved along the route as you do your work. Root bases are viable; the plant grows back when moved. So digging/pulling all plants to remove the root stocks, and taking this material somewhere where it can be dried out would be desirable. Sites should be marked. Then the dirt contaminated with seeds should be removed and stored in some place where it can be watched, and seedlings pulled out as they appear. 

AN AFFILIATE OF EARTH SHARE

Other less invasive weed, along the route may be controlled by weed-free mulches. Sterile grass plantings, however, such mulches will not inhibit brown seedlings. Doubtless, there will be more bloom seedlings that grow after you have finished grading, culvert work, etc., so there should be plans to monitor the roadside & pull as seedlings regularly.

The other seriously detrimental, non-native invasive plant, which may occur on parts of the route, is Canada thistle. Every piece of its underground rhizome is viable and will develop into a new plant. Breaking the rhizome by pulling only adds more stems. Patches should be dug up deeply enough to capture all roots, and this material stockpiled somewhere to dry out. Monitoring the roadway after work is finished should concentrate on ~~all~~ clipping leafy stalks just prior to bloom, doing this several times a season as they re-occur. If it forms seeds they will blow in open areas of planted seedlings or thinned timber and begin dense patches. Seeds bloom will move in a little more gradually, but both plants will inhibit growth of ground cover natives.

I apologize for the messy writing. Currently, I am lying flat on my back in a care center, recovering from a fractured hip. It's difficult to write at this angle, and a pencil is better until it needs sharpening. I'll be here too long to get home

Grisdale Road Public Open House
WA PFH 208-1(1)
Wednesday, March 23, 2005

Comment Sheet

Name _____

Address _____

Your comments, concerns, suggestions, and questions are important. Please leave it with us at this open house or mail it to us by folding this sheet. The mailing address is on the back. Please mail your comments to us by April 6, 2005.

THIS IS A LUNICRIS EXAMPLE OF THE U.S. GOV'T WASTING MY TAX DOLLARS. IF THE USFS WAS GOING TO SET 50-100M² PER YEAR AND HAVE TIMBER RECEIPTS GOING TO THE SCHOOLS - THEN IT COULD BE CONSIDERED BENEFICIAL. TO HAVE THIS AMOUNT OF MONEY SPENT PURELY SO RECREATIONISTS CAN ACCESS THE LAKE/DAM AREA WITHOUT GETTING THEIR CARS DIRTY IS ABSURD.

THIS WILL PROVIDE FOR INCREASED TRAFFIC, POTENTIAL INCREASE IN THE NUMBER OF SEARCH AND RESCUE OPPORTUNITIES, AND THE NEED TO LIFT AN INCREASED NUMBER OF INJURED OUT AS THERE IS NO IMMEDIATE MEDICAL AID AVAILABLE. THIS IS INEVITABLE IF YOU INCREASE THE AMOUNT OF VISITORS.

BOTTOM LINE, MORE ACCESS FEE/PERMIT REVENUE WILL BE POTENTIALLY AVAILABLE ~~BE~~ TO BE COLLECTED FROM U.S. TAXPAYERS FOR THE USE OF THE LAND THAT THE CITIZENS ALREADY OWN.

THE ONLY WAY THIS COULD BE COST EFFECTIVE, IS IF THERE IS A WHOLE LOT OF TIMBER TO BE Hauled DOWN THIS ROAD!! PLEASE DO NOT WASTE MY MONEY!!!
DIVERT THESE FUNDS TO GRAYS HARBOR COUNTY TO HELP ADDRESS THE LUNICRIS IMPROVEMENT IN BPA DAILY DATES -

OR BETTER YET, GIVE THE MONEY TO THE LOCAL SCHOOLS
AND LET THE KIDS BE THE BENEFICIARIES.

STOP THIS INSANE IDEA OF
GOVERNMENT WASTE !!

Federal Highway Administration
Western Federal Lands Highway Division
610 East Fifth Street
Vancouver, WA 98661

**Federal Highway Administration
Western Federal Lands Highway Division
ATTN: Rochelle Byars
610 East Fifth Street
Vancouver, WA 98661**

APPENDIX E

Expected or Observed Wildlife Species

Table E-1. Wildlife expected or observed during 2004 and 2005 field investigations within the vicinity of the Camp Grisdale Road project.

Type of Species	Common Name	Scientific Name
Mammals	American beaver ^a	<i>Castor canadensis</i>
	American marten	<i>Martes Americana</i>
	American mink	<i>Mustela vison</i>
	Big brown bat	<i>Eptesicus fuscus</i>
	Black bear ^a	<i>Ursus americanus</i>
	Black-tailed deer ^a	<i>Odocoileus hemionus columbianus</i>
	Bobcat	<i>Lynx rufus</i>
	Bushy-tailed woodrat	<i>Neotoma cinerea</i>
	California myotis	<i>Myotis californicus</i>
	Coastal mole	<i>Scapanus orarius</i>
	Common porcupine	<i>Erethizon dorsatum</i>
	Coyote ^a	<i>Canis latrans</i>
	Creeping vole	<i>Microtus oregoni</i>
	Deer mouse ^a	<i>Peromyscus maniculatus</i>
	Douglas's squirrel	<i>Tamiasciurus douglasii</i>
	Hoary bat	<i>Lasiurus cinereus</i>
	Keen's bat	<i>Myotis keenii</i>
	Little brown myotis	<i>Myotis lucifugus</i>
	Long-eared myotis	<i>Myotis evotis</i>
	Long-legged myotis	<i>Myotis volans</i>
	Long-tailed vole	<i>Microtus longicaudus</i>
	Long-tailed weasel	<i>Mustela frenata</i>
	Marsh shrew	<i>Sorex bendirii</i>
	Masked shrew	<i>Sorex cinereus</i>
	Mountain beaver	<i>Aplodontia rufa</i>
	Mountain lion	<i>Puma concolor</i>
	Mule deer ^a	<i>Odocoileus hemionus ssp. columbianus</i>
	Muskrat	<i>Ondatra zibethicus</i>
	Northern flying squirrel ^a	<i>Glaucomys Sabrinus</i>
	Pacific jumping mouse	<i>Zapus trinotatus</i>
	Raccoon ^a	<i>Procyon lotor</i>
	River otter	<i>Lutra canadensis</i>
	Roosevelt elk ^a	<i>Cervus elaphus roosevelti</i>
	Short-tailed weasel	<i>Mustela erminea</i>
	Shrew-mole	<i>Neurotrichus gibbsii</i>
	Silver-haired bat	<i>Lasionycteris noctivagans</i>
	Snowshoe hare	<i>Lepus americanus</i>

Type of Species	Common Name	Scientific Name
Mammals (continued)	Southern red-backed vole	<i>Clethrionomys gapperi</i>
	Striped skunk	<i>Mephitis mephitis</i>
	Townsend's big-eared bat	<i>Corynorhinus townsendii</i>
	Townsend's chipmunk ^a	<i>Tamias townsendii</i>
	Townsend's mole	<i>Scapanus townsendii</i>
	Townsend's vole	<i>Microtus townsendii</i>
	Trowbridge's shrew	<i>Sorex trowbridgii</i>
	Vagrant shrew	<i>Sorex vagrans</i>
	Virginia opossum	<i>Didelphis virginiana</i>
	Water shrew	<i>Sorex palustris</i>
	Western red bat	<i>Lasiurus blossevillei</i>
	Western spotted skunk	<i>Spilogale gracilis</i>
	Yuma bat	<i>Myotis yumanensis</i>
Birds	American crow ^a	<i>Corvus brachyrhynchos</i>
	American dipper ^a	<i>Cinclus mexicanus</i>
	American goldfinch ^a	<i>Carduelis tristis</i>
	American pipit	<i>Anthus rubescens</i>
	American robin ^a	<i>Turdus migratorius</i>
	Anna's hummingbird ^a	<i>Calypte anna</i>
	Bald eagle ^a	<i>Haliaeetus leucocephalus</i>
	Band-tailed pigeon	<i>Columba fasciata</i>
	Barn swallow ^a	<i>Hirundo rustica</i>
	Black-capped chickadee ^a	<i>Parus atricapillus</i>
	Black-headed grosbeak	<i>Pheucticus melanocephalus</i>
	Black-throated gray warbler ^a	<i>Dendroica nigrescens</i>
	Barred owl ^a	<i>Strix varia</i>
	Belted kingfisher ^a	<i>Ceryle alcyon</i>
	Bewick's wren ^a	<i>Thyomanes bewickii</i>
	Blue grouse	<i>Dendragapus obscurus</i>
	Brewer's blackbird ^a	<i>Euphagus cyanocephalus</i>
	Brown creeper	<i>Certhia americana</i>
	Brown-headed cowbird	<i>Molothrus ater</i>
	Bushtit	<i>Psaltiriparus minimus</i>
	Canada goose ^a	<i>Branta canadensis</i>
	Cassin's vireo ^a	<i>Vireo cassinii</i>
	Cedar waxwing	<i>Bombycilla cedrorum</i>
	Chestnut-backed chickadee ^a	<i>Parus rufescens</i>
	Chipping sparrow	<i>Spizella passerina</i>
	Cliff swallow ^a	<i>Petrochelidon pyrrhonota</i>
	Common loon ^a	<i>Gavia immer</i>

Type of Species	Common Name	Scientific Name
Birds (continued)	Common nighthawk ^a	<i>Chordeiles minor</i>
	Common raven ^a	<i>Corvus corax</i>
	Common yellowthroat ^a	<i>Geothlypis trichas</i>
	Cooper's hawk	<i>Accipiter cooperii</i>
	Dark-eyed Junco ^a	<i>Junco hyemalis</i>
	Downy woodpecker ^a	<i>Picoides pubescens</i>
	Dusky flycatcher	<i>Empidonax oberholseri</i>
	European starling ^a	<i>Sturnus vulgaris</i>
	Eastern kingbird ^a	<i>Tyrannus tyrannus</i>
	Evening grosbeak	<i>Coccothraustes vespertinus</i>
	Golden eagle	<i>Aquila chrysaetos</i>
	Golden-crowned kinglet ^a	<i>Regulus satrapa</i>
	Goldfinch ^a	<i>Carduelis</i> sp.
	Gray jay ^a	<i>Perisoreus canadensis</i>
	Great Blue heron ^a	<i>Ardea herodias</i>
	Great horned owl ^a	<i>Bubo virginianus</i>
	Gull spp. ^a	<i>Larus</i> spp.
	Hairy woodpecker ^a	<i>Picoides villosus</i>
	Hammond's flycatcher ^a	<i>Empidonax hammondii</i>
	Hermit thrush ^a	<i>Catharus guttatus</i>
	Hermit warbler ^a	<i>Dendroica occidentalis</i>
	House wren	<i>Troglodytes aedon</i>
	Hutton's vireo ^a	<i>Vireo huttoni</i>
	Killdeer	<i>Charadrius vociferus</i>
	Lincoln's sparrow	<i>Melospiza lincolnii</i>
	Mallard ^a	<i>Anas platyrhynchos</i>
	Marbled murrelet ^a	<i>Brachyramphus marmoratus</i>
	Marsh wren ^a	<i>Cistothorus palustris</i>
	Merganser spp. ^a	<i>Mergus</i> spp.
	Mountain quail	<i>Oreortyx pictus</i>
	Mourning dove ^a	<i>Zenaida macroura</i>
	Northern flicker ^a	<i>Colaptes auratus</i>
	Northern goshawk	<i>Accipiter gentilis</i>
	Northern pygmy owl	<i>Glaucidium gnoma</i>
	Northern saw-whet owl ^a	<i>Aegolius acadicus</i>
	Northern shrike	<i>Lanius excubitor</i>
	Northern spotted owl	<i>Strix occidentalis</i>
	Northwestern crow	<i>Corvus caurinus</i>
	Olive-sided flycatcher ^a	<i>Contopus cooperi</i>
	Orange-crowned warbler	<i>Vermivora celata</i>

Type of Species	Common Name	Scientific Name
Birds (continued)	Osprey ^a	<i>Pandion haliaetus</i>
	Pacific-slope flycatcher ^a	<i>Empidonax difficilis</i>
	Peregrine falcon ^a	<i>Falco peregrinus anatum</i>
	Pileated woodpecker ^a	<i>Dryocopus pileatus</i>
	Pine siskin	<i>Carduelis pinus</i>
	Purple finch	<i>Carpodacus purpureus</i>
	Red crossbill	<i>Loxia curvirostra</i>
	Red-breasted nuthatch ^a	<i>Sitta canadensis</i>
	Red-breasted sapsucker	<i>Sphyrapicus ruber</i>
	Red-eyed vireo	<i>Vireo olivaceus</i>
	Red-tailed hawk ^a	<i>Buteo jamaicensis</i>
	Red-winged blackbird	<i>Agelaius phoeniceus</i>
	Rock dove	<i>Columbia livia</i>
	Rough-winged swallow	<i>Stelgidopteryx serripennis</i>
	Ruffed grouse ^a	<i>Bonasa umbellus</i>
	Rufous hummingbird ^a	<i>Selasphorus rufus</i>
	Sharp-shinned hawk	<i>Accipter striatus</i>
	Song sparrow ^a	<i>Melospiza melodia</i>
	Sora rail	<i>Porzana carolina</i>
	Spotted towhee ^a	<i>Pipilo maculatus</i>
	Steller's jay ^a	<i>Cyanocitta stelleri</i>
	Swainson's thrush ^a	<i>Catharus ustulatus</i>
	Townsend's solitaire	<i>Myadestes townsendi</i>
	Townsend's warbler	<i>Dendroica townsendi</i>
	Tree swallow ^a	<i>Tachycineta bicolor</i>
	Turkey vulture ^a	<i>Cathartes aura</i>
	Varied thrush ^a	<i>Ixoreus naevius</i>
	Vaux's swift ^a	<i>Chaetura vauxi</i>
	Violet-green swallow ^a	<i>Tachycineta thalassina</i>
	Virginia rail	<i>Rallus limicola</i>
	Warbling vireo	<i>Vireo gilvus</i>
	Western kingbird ^a	<i>Tyrannus verticalis</i>
	Western screech-owl	<i>Otus kennicottii</i>
	Western bluebird	<i>Sialia mexicana</i>
	Western tanager	<i>Piranga ludoviciana</i>
	Western wood-pewee ^a	<i>Contopus sordidulus</i>
	White-crowned sparrow	<i>Zonotrichia leucophrys</i>
	Willow flycatcher ^a	<i>Empidonax traillii</i>
	Wilson's warbler ^a	<i>Wilsonia pusilla</i>
	Winter wren ^a	<i>Troglodytes troglodytes</i>

Type of Species	Common Name	Scientific Name
Birds (continued)	Wood duck	<i>Aix sponsa</i>
	Yellow warbler ^a	<i>Dendroica petechia</i>
	Yellow-rumped warbler	<i>Dendroica coronata</i>
Reptiles	Puget Sound garter snake ^a	<i>Thamnophis pickeringii</i>
	Northern alligator lizard	<i>Elgaria coerulea</i>
	Northwestern garter snake ^a	<i>Thamnophis ordinoides</i>
Amphibians	Cope's giant salamander ^a	<i>Dicamptodon copei</i>
	Ensatina ^a	<i>Ensatina eschscholtzii</i>
	Long-toed salamander	<i>Ambystoma macrodactylum</i>
	Northwestern salamander ^a	<i>Ambystoma gracile</i>
	Olympic torrent salamander ^a	<i>Rhyacotriton olympicus</i>
	Pacific treefrog	<i>Hyla regilla</i>
	Red-legged frog ^a	<i>Rana aurora</i>
	Roughskin newt ^a	<i>Taricha granulosa</i>
	Tailed frog	<i>Ascaphus truei</i>
	Van Dyke's salamander	<i>Plethodon vandykei</i>
	Western redback salamander ^a	<i>Plethodon vehiculum</i>
	Western toad ^a	<i>Bufo boreas</i>

Sources: Corkran and Thoms (1996); Leonard et al. (1993); Nagorsen and Brigham (1993); St. John (2002).

^a Species observed visually or audibly during field investigation within the vicinity of the project corridor.

APPENDIX F

Hazardous Materials Investigation

Appendix F—Hazardous Materials Investigation

Hazardous materials may be classified in different categories based on the laws and regulations that define their characteristics and use. These classifications include the following:

- Hazardous waste
- Dangerous waste
- Hazardous substances
- Toxic substances.

The U.S. Environmental Protection Agency (U.S. EPA) and Washington Department of Ecology (Ecology) maintain databases to track sites with potential and confirmed releases of chemicals to the environment and monitor facilities that manage hazardous materials as part of their operations. A brief summary of regulations enforced by the agencies is provided below.

The federal Resource Conservation and Recovery Act (RCRA) defines what is meant by hazardous waste. In Washington, the Washington Department of Ecology has been authorized by the U.S. EPA to implement most of the RCRA program. Authorization is based on state hazardous waste regulations that are consistent with and at least as stringent as the federal requirements, defined in Washington as dangerous waste. The U.S. EPA tracks hazardous waste management at individual facilities throughout the state based on notification requirements and records. These requirements and records define the magnitude of waste generated (e.g., small or large quantity); define the type of handling performed (e.g., treatment, storage, or type of disposal); or identify whether a release to the environment has occurred. The Washington Department of Ecology tracks facilities based on required registration of underground storage tanks; it also maintains an inventory of solid waste facilities and landfill sites. Within Washington state, the following regulations have authority over dangerous waste activities:

- Chapter 70.105 RCW (1976), Washington’s Hazardous Waste Management Act
- Dangerous Waste Regulations, WAC 173-303 (2000)
- Hazardous Waste Reduction Act, RCW 70.95
- Pollution Prevention Plans, WAC 173-307 (1991)
- Hazardous Waste Fees, WAC 173-305 (1992).

Nationally, the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), also known as Superfund, defines hazardous substances. The Washington Department of Ecology operates a parallel program in Washington state under the Model Toxics Control Act (MTCA). Both programs are designed and administered to provide appropriate

responses to the release of hazardous substances to the environment. MTCA also addresses releases of petroleum products not covered under federal statutes. The U.S. EPA tracks sites based on reported potential or actual releases of hazardous substances to the environment, emergency response notifications, and cleanup progress at major release sites. The Washington Department of Ecology tracks the same type of sites and also tracks petroleum releases, including releases from underground storage tanks. Within Washington state, the following regulations have authority over hazardous substance activities:

- RCW Chapter 70.105D RCW (1989), State Hazardous Waste Cleanup (MTCA)
- Chapter 70.102.020 RCW, Hazardous Substance Information Act
- Chapter 15.54 RCW, Fertilizer Regulation Act. Clarifies the Washington Department of Ecology's oversight authority over waste-derived fertilizers.

Toxic substances are a subset of hazardous substances also regulated by the federal Toxic Substances Control Act (TSCA). TSCA was adopted so that all new chemical substances and existing chemicals put to new uses, other than pesticides, could be evaluated for health and environmental effects. Additional controls governing disposal, beyond CERCLA and RCRA, have been specifically applied to polychlorinated biphenyls (PCBs). TSCA sites are tracked by the U.S. EPA.

Hazardous Material Site Categories

Hazardous materials sites in the project area fall into two categories based on whether a release to the environment has been documented or is considered a potential threat.

Documented Release Sites

Documented releases of hazardous materials to the environment as identified in regulatory agency site files, directly affect soil and/or ground water. Releases to soil only are generally limited in lateral extent and have limited potential for migration beyond the release area. Releases to ground water tend to extend farther from the area of origin and can potentially result in impacts to the project area even when the source is located offsite.

Potential Release Sites

A potential for release of hazardous materials is identified based on the site activity registered with regulatory agencies, the development of site activities evident from historical documentation (e.g., a foundry site that became a service station and then was developed for an office building), or the current activity evident from visual observation (e.g., junk yard). Potential release sites have been identified based on the following categories:

- Reported current activities (e.g., hazardous waste generator)
- Reported current features (e.g., registered underground storage tanks)
- Recorded historical activities (e.g., mapped “oil and gas” designation)
- Recorded historical features (e.g., mapped tank farm)
- Visually identified activity or feature.

Sites of potential for releases have not been characterized and may or may not have soil or ground water contamination.

Methods

Facilities that generate hazardous waste and sites identified with actual or potential hazardous materials releases are registered with either the Washington Department of Ecology or the U.S. EPA. These facilities and sites are tracked on databases available to the public for review. For this project, hazardous materials sites were identified through a search of federal and state regulatory databases; a review of historical photographs and books covering logging camps in the project area; historical parcel maps; historical county directories; and a visual reconnaissance of the project corridor.

Federal Databases Searched

Comprehensive Environmental Response and Liability Information System (CERCLIS)

CERCLIS contains data on potentially hazardous waste sites that have been reported to the U.S. EPA by states, municipalities, private companies, and private persons pursuant to Section 103 of CERCLA. CERCLIS contains sites either proposed or on the National Priorities List (NPL) and sites in the screening and assessment phase for possible inclusion on the NPL. The CERCLIS list contains sites from 1983 to the present.

Resource Conservation and Recovery Information System (RCRIS)

RCRIS includes selective information on sites that generate, transport, store, treat and/or dispose of hazardous waste, as identified by the Resource Conservation and Recovery Act (RCRA).

Toxic Chemical Release Inventory System (TRIS)

TRIS identifies facilities that release toxic chemicals to the air, water, and land in reportable quantities under SARA Title III Section 313.

State Databases Searched

Confirmed & Suspected Contaminated Sites List (CSCSL)

State hazardous substance site records are the states’ equivalent to the federal Superfund CERCLIS. These sites may or may not be included on the federal CERCLIS list.

Hazardous Sites List (HSL)

The HSL is a subset of the CSCSL Report. It includes sites that have been assessed and ranked using the Washington Ranking Method (WARM).

Leaking Underground Storage Tank Site List (LUST)

Leaking underground storage tank records contain an inventory of reported leaking underground storage tank incidents. The LUST list may also identify the type of material released and the affected media (i.e., air, soil, and water).

Underground Storage Tank Database (UST)

Underground storage tanks are regulated under Subtitle I of RCRA and must be registered with the Washington Department of Ecology. The database contains information on the site location, number of tanks, materials stored, status of the tank (i.e., operational, removed, closed-in-place, etc.), date of tank installation, etc. of registered tanks. Heating oil tanks are not regulated or registered, and are not listed in this database.

Historical Records

- Historical photographs of Simpson Timber Company's logging camps from the University of Washington digital collection (University of Washington 2004) and the book titled *Grisdale, Last of the Logging Camps: A Photo Story of Simpson Camps from 1890 into 1986* (James 1986)
- Historical Metsker's Atlas (parcel maps) of Grays Harbor, Washington (1941, 1952, and 1976)
- Aberdeen and Hoquiam (including Grays Harbor County) directories (1959 and 1969).

Site History

Logging activities began in the area surrounding the project corridor in the early 1900s. Various timber companies, including the Simpson Timber Company, constructed logging railroads throughout the forested areas, as well as logging camps for the workers. Two camps existed between the 1920s and the 1940s within the Wynoochee River valley either adjacent to the logging railroad or within the river valley (see Figure 4-8; Camp No. 5 located east of Schafer Creek and Camp No. 7 located west of Camp No. 5). Wood stoves were used for heating at these camps. Prior to the 1930s, logging equipment (i.e., donkey engines) was powered by steam. Diesel-powered caterpillar tractors and bulldozers were used for logging in the 1930s and 1940s; no historical information was available regarding where and how diesel fuel was stored.

By 1946, residences at Camp No. 5 moved 8 miles north to Camp Grisdale, a forest community complex built by the Simpson Timber Company. The complex was constructed between the existing logging railroad and a paved road (Camp Grisdale Road), and included 52 family homes, 38 bunkhouses, a cookhouse, a mercantile store, and other structures associated with Simpson's lumber processing, including machine repair shops. Heating oil was used throughout the complex, indicating possible underground storage tanks used to store the oil at each of the residences and other structures. No historical information is available on whether a gasoline service station operated in Grisdale; however, based on an aerial photograph view of the town (page 68; James 1986), a small pump island appeared connected to the mercantile store and may have been used for gasoline service. Based on a comparison of the historical photo to current maps of the area, the pump island appears to be located approximately two blocks from the current roadway, and closer to the railroad track. Grisdale continued as an active company town until Simpson Timber closed its lumber processing plant in 1986. Based on the visual reconnaissance, the building foundation pads are all that remains of the town.